

# Maclean's

Canada's Weekly Newsmagazine

January 10, 2000

**SPECIAL  
REPORT**

**Y2K—OK**

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LOOKING INTO THE FUTURE

# Medicine in 2020



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## Editor

## Across Canada, a system in crisis

The subject of this week's cover package is the state of medicine to come in the next century. Understandably, Canadians may be more concerned about the state of health care to come in the next week. Across the country, there is an acute shortage of doctors and nurses. Emergency wards are jammed because there are not enough beds. The metaphor for the crisis was the day in October, 1998, when they blew up a Calgary hospital to save the system.

Then, last week, the Ontario government appointed McMaster University president Peter George to find solutions to the acute shortage of doctors. And that is a time when the Ontario auditor has reported that the so-called health-care restructuring program (aka *Doctors Anonymous*) may cost almost as much (\$4 billion) as it will save by amalgamating hospitals and eliminating positions.

The crisis, of course, is not unique to Canada. In the United States, governments and corporations are pushing for reforms in response to a report in November that revealed, literally, fatal flaws in the health-care system. Nor does it help to know that some of the problem

is seasonal—an outbreak of influenza this month when Canadian hospitals are short staffed because of the holidays. If you were in an ambulance in Toronto on the morning of Dec. 27, 24 of 25 area hospitals would have turned you



Surgery in Manitoba shortage

away. There is a chilling phrase for the acute critical-care bypass: *Sounds almost medicinal, doesn't it?*

This was the state of Canadian health care at the end of the 20th century? In Nova Scotia in the summer of 1999, experts bemoaned a shortage of 600 nurses. In July, officials in northern Quebec appealed as nurses to come home from

hospitals in the south where they had been hired to fill vacancies. Last month, there were 230 vacant positions in Calgary hospitals. In Manitoba, where the former Conservative government cut 1,000 nursing positions, there were 250 vacant positions. "It's fair to say we are taking a second look at some of the things we did way back when," associate deputy health minister Sue Hicks told the *Winnipeg Free Press*.

Such candour would be more becoming of politicians than bureaucrats just following orders. But the politicians refuse to admit their mistakes. The doctors' shortage—estimated at 1,000 in Ontario alone—is directly traceable to the fateful decision of provincial governments in 1992 to cut back on funding of positions in medical schools. Now, having slashed health-care spending, governments—led by Ontario, which caused the problem by reducing transfers to the provinces—are pouring money back into the system. It is enough to make you sick—just don't call 911 for a few days.

*Robert Lewis*

## Newsroom Notes

## Fact and fiction

In this issue, Senior Writer Robert Sheppard and Science Editor Mark Nichols look forward to the medical wonders awaiting Canadians over the coming decades. While Nichols concentrates on the benefits likely to arise from scientists' rapidly growing knowledge of human genetic makeup, Sheppard looks at the hi-tech revolution—

the astonishing robotic devices that are beginning to redefine surgery. In a departure from customary newsmagazine format, Sheppard opens the 13-page cover package with a portrait of a day in the life of health care in the year 2020. It is a world of generously engineered designer drugs, implanted medical sensors, long-distance robotic surgery and only rare visits to a hospital—a scenario



Sheppard (left) with Nichols

based entirely on research already well under way. "Is this science fiction? I don't think so," says Sheppard. "To a certain degree we can leave the future of medicine because the ground is already shifting beneath our feet." Over-

seen by Assistant Managing Editor Robert Marshall and designed by Art Director Nick Barnett, the report begins on page 40.

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# The Mail



## 'More like us'

We must be talking to two different groups of Canadians because those I talk with shudder to think what would happen to Canada and our Canadian identity if the border vanished ("The vanishing border," *Caveau*, Dec. 20). As a Canadian temporarily living in the United States, it concerns me that other Canadians see this as an inevitable situation. The spectre of joining the U.S. trading pot would not be worth the gains, monetarily or otherwise. Patriotism runs deep in postmodern Canada, and if on the off-chance we ever decide to unite with our neighbours to the south, I am guessing they will find an empty country; everyone will have emigrated to New Zealand or will be living in a beachfront on the coast of Greenland.

Charolette R. Carlson, Maricopa, Ind.

### Letters to the Editor

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"The vanishing border" is the *Maclean's* cover story Bruce Maloney must have imagined when he bowed down to Ronald Reagan in the '80s.  
**Don Brinkhous, Nelson, Ont.**

Perhaps there is no topic of conversation as useless as the "preservation of traditional family values," as mentioned in the poll. There is not a respondent on earth who wouldn't tend to agree, so it should come as no surprise that both countries' respondents answered yes at over 90 per cent. We may have very different traditional values from those professed by African tribesmen, Muslims or, yes, even Americans, but our desire to preserve them will be equally as strong. As for the union question, I am sick of the term "51st state." In my imagination, or with Canada 347,000 square kilometres larger than the United States? We are currently divided into 13 self-governing regions that can barely get along, and yet we are expected to function as one voice in an American arena? As for becoming more like Americans, I feel they are becoming more like us.  
**David Binkley, Waterloo, Ont.**

I find the cover offensive. The next time you tell the Canadian Maple Leaf with the American colours, you can cancel my subscription.  
**Vera Goldfish, North Downs, B.C.**

Having worked with Americans all over the world, I have observed that they seem to feel the need to be in control of whatever they are involved in, more so than any other nationality. Canadians, on the other hand, generally prefer a more co-operative team method. I think this is also true about how we see our respective countries. Americans carry their hearts on their sleeves, Canadians are more reserved in

## Bragging rights

Being a Newfie in British Columbia, I laughed when I read "Doing it and enjoying it" about Newfoundland being the most sexually active in Canada. This article reminded me of my days at Memorial University in St. John's when guys claimed to have sex "four or five times a week." Most were lucky to find sex that many times a year. Remember the article "Talking about it and enjoying it."  
**Elisa Bilsand, Campbell River, B.C.**

their patriotism. That does not mean that we care for our country any less. Canadians and their culture do not need a definitive definition to be Canadian. It is to be welcomed and respected anywhere you go. There is no better passport in the world to hold.  
**Kari Plummer, Baka, Manitoba**

As a young Canadian, I have difficulty believing that we have a hard time deciding "What makes a Canadian?" Our many languages, our connection to Britain and the Queen, the uniqueness of our art and music, and the outpouring of support at the creation of our new territory, Nunavut, are but a few examples of what makes us Canadian, and different from the United States. Friends both at university and at home tend to agree—leading me to believe that young Canadians seem to know what makes them Canadian.  
**Mathias Lorenzen, Fredericton**

## For sale: Canada

Hats off to Peter C. Newman in his fine essay "The year of living dangerously" (*Dec. 20*). He is his old self and is absolutely correct in his assertion that our government is presiding over our dissolution. Effectively, our country ended in November, 1988, when Branch Plant Brain (Maloney) led us into free trade, and the current lot are simply advancing the terms of our nationhood. The dire predictions of us nationalists are coming true: health care under attack, U.S.-led globalization supplanting over more to Canadian policies,



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# Notes

Edited by Tarryn Darnes

## Stronach's daughter and King Koss tie the knot

**They make a powerhouse couple for a new century:** King Koss and the boss daughter. In New York's elite nuptials near Vail, Colo., Norse speed-skating legend Johann Olav Koss, 31, married Canadian Belinda Stronach, 33, the heir apparent to Frank Stronach's Magna International auto-parts empire. For the ceremony, the bride wore a '40s-inspired silver-blue silk gown, while the groom donned a more producible black tux. Their only reason was to keep the Norwegian media from prying because Koss, who won three gold medals at the Lillehammer Olympics in 1994, has become an icon in his homeland.

Since retiring from his sport, Koss has finished a medical degree and his name has become synonymous with the campaign to clean up the Olympics. Recently, he was appointed an adviser member of the International Olympic Committee and a leader of the World Anti-Doping Agency. Stronach is no slouch either. A hardworking executive at Magna, she is also president of the fashion house Miu Miu Inc. (which designed her wedding attire) and active in Magna's charitable pursuits. In fact, leading a group concerned about the state



The newlyweds: a couple that plan to make a difference

of the IOC led Stronach to meet Koss last April in London.

The newlyweds plan to live mainly at their home on the Stronach estate north of Toronto. Given the family fortune (Magna is a \$10-billion-a-year concern) and the fact that Stronach has two children from a previous marriage, Koss signed a prenuptial agreement. But expect to see the pair using their resources to get behind some good causes. "We'll have to evaluate what we want to pursue as a couple," says Stronach. "We both want to do something positive with our lives to make a positive impact on society." But first, the newlyweds plan to hit the slopes for a skiing honeymoon.

## A nameless time

**A new decade** has landed, but what to call it? The naming of the decades began in the 1880s and has since provided a useful reference point in 10-year chunks. There have been the Roaring '20s, Dirty '30s, styles of the '50s, rock music of the '60s and kids of the '90s. But besides "turn of the century," there is no term for the first decade of the 21st century. And now a similar word greets the arrival of 2000.

A definitive term has yet to catch on. Many agree that "the old" sounds weird, per *The New York Times* (as written in focus of it). Some suggest the "yugra," while *The Washington Post* is pushing "the present." Meanwhile, at the Web site



A market in Halifax at the turn of the century: will this next first decade be called anything?

NameTheDecade.com, the "naughties" took an early lead.

Katherine Barber, editor-in-chief of the *Canadian Oxford Dictionary*, says she doubts the naughties will make it. "It is too cute, too precious," says Barber, who can't offer a prediction herself. "Lexicographers don't have crystal balls. We wait and see what catches on and then put that in the dictionary." Barber suggests

the name will come from the mass media. "Often something like a hit television show will offer the terms that trickle." With *Seinfeld* gone, maybe *Jingles* and one of his prospective millionaires can provide the "final answer."



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\*Source: Ward's July 1999 (347 hp/170). \*\*Ward's Auto World, June 1999.

Explorer

# Bombs away

For years, the dilemma of how to safely dispose of small bombs—including those filled with chemical and biological warfare agents—plagued security agencies all over the world. But now, a Canadian product called Blue Guard is capable of both containing bombs for safe disposal and killing deadly chemical agents that may be released on detonation.

The Moortons have been using early versions of Blue Guard, developed by the RCMP and the department of national defense, over the past nine years. "When we started to deal with the issue of veterans who might use biological and chemical warfare, we didn't have anything on the shelf to work with," says Sgt. John Bureau, of the RCMP's explosive disposal and technology section, who was part of the design team.

Blue Guard consists of a dome-shaped tent made of a flexible, 60-litre material. The 1.5-m high, 14-litre tent is erected over the bomb by a robot. The structure protects bomb disposal experts who can safely work on disarming the explosive through small openings in the tent. If the bomb is going to explode, a specially formulated foam consisting of water and decontaminants is injected into the tent to capture bomb fragments and destroy chemical agents if they exist.

The RCMP and the DND licensed the technology to Fort Erie, Ont.-based Irvin Aerospace Canada Ltd. in 1998. After spending approximately \$500,000 on fine-tuning, Irvin started marketing Blue Guard 18 months ago. So far, 10 units have been sold to security agencies around the world.



A robot places a tent over a bomb safer disposal

# A virtual Lotusland

A perfect Web site for self-proclaimed Vancouverites or for those who are thinking of moving to Vancouver, [www.vancouver.com](http://www.vancouver.com) offers a virtual tour of actual streets in the city's downtown core. Created by Danilo Jurisich, 26, a Lethbridge, Alta., native who moved to Vancouver four years ago, the site has 350 segments of interactive panoramic photographs. Viewers can click on a picture and travel up a street to the next photo. Jurisich's favourites include the beach at English Bay on a sunny day and the coxhouse at the corner of Robson and Howe.

# Scent wear

In future, it may be the smell of the clothes that makes the man. Three Korean companies, LG Fashion, Essex Heattex and Kolon International, have started selling men's suits made from scented fabric. The material is soaked in a chemical that contains scented micro-capsules that pop and release a fragrance when the wearer moves. Priced between \$300 and \$500, the pine, lavender and pepper-mint-scented suits are selling out at stores in Seoul and in fashion-conscious Los Angeles. No word yet on when Canadians are likely to catch their drift.

Susan Oh

# Passages

**Died:** Canadian-born entertainer Hank Snow, 85, whose 1950 hit song *The Moon's On Me* made him a country music legend for close to 50 years, of heart failure, in Nashville. Born in Liverpool, N.S., Snow had 40 Top 10 songs on the country music charts, and sold an estimated 70 million records worldwide.



**Recovering:** Former Beatz George Harrison, 56, from a stab wound to the chest after he and his wife, Olivia, were attacked by an intruder at their home, near London. The knife penetrated Harrison's chest but missed major organs. His wife sustained minor head injuries on the table.

**Died:** Rhythm and blues legend Curtis Mayfield, 57, whose style influenced artists from pop to hip-hop, in Roswell, Ga. A member of the Rock and Roll Hall of Fame, Mayfield's hits included *People Get Ready* and *Keep on Pushing*.

**Arrested:** Rapper and record producer Sean (Puffy) Combs, 29, for weapons possession in the wake of a shooting at a dance club in New York City. Combs was arrested after police found a stolen gun in the car in which he and his girlfriend, across-singer Jennifer Lopez, 29, left the club. Lopez was also arrested initially, but charges against her were dropped. Combs was released on \$10,000 (U.S.) bail.

**Died:** Actor Clayton Moore, 85, who played the masked hero of the popular 1950s television show *The Lone Ranger*, of a heart attack, in Los Angeles.

**Died:** Former University of Oregon track coach Bill Bowerman, 88, who co-founded the shoe and apparel giant Nike with Phil Knight in the mid-1960s, at his home, in Beav, Ore.

**Married:** Comedian Jerry Seinfeld, 45, to Jessica Seider, 28, a public relations executive, in New York City.

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What Matters to Canadians

## Opening Notes

### Best-Sellers

#### Fiction

(MCCLENNAN LAST WEEK)

1. A KISS IN THE HOLE, Linda Bondart (H) 1
2. MY DEAREST WITCHAMIE, Anne Robb (H) 1
3. BACKFIRE AND AFTER, Alex Collier (H) 2
4. FRODO BAGGINS, J.R.R. Tolkien (H) 3
5. THE WINDS OF WINTER, Hilary Mantel (H) 4
6. THE WINDS OF WINTER, Hilary Mantel (H) 4
7. SALVATION OF THE FLOOD, Hilary Mantel (H) 5
8. THE WINDS OF WINTER, Hilary Mantel (H) 5
9. THE WINDS OF WINTER, Hilary Mantel (H) 5
10. THE WINDS OF WINTER, Hilary Mantel (H) 5

#### Nonfiction

1. THE WINDS OF WINTER, Hilary Mantel (H) 1
2. THE WINDS OF WINTER, Hilary Mantel (H) 1
3. THE WINDS OF WINTER, Hilary Mantel (H) 1
4. THE WINDS OF WINTER, Hilary Mantel (H) 1
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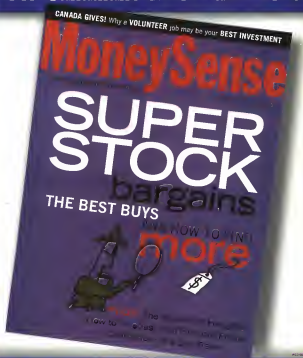
Compiled by Susan Pedlow

### Down on the farm

Journalist Marsha Boulton, a former *Maclean's* editor, moved to the Ontario countryside a decade ago and later won the Stephen Leacock Medal for Humour for her *Letters from the Country*. She builds on her previous work in a new book, *Letters from Above the Country* (McArthur & Co.) by including readers' own odd tales of life on the farm. So it is that Boulton's account of rearing, drowning, dissection and vodka is topped by the story of an alcoholic woman, and her worms once reeking of sheep are put in perspective by a farm wife's story of being buried into a manure pile just before meeting her daughter's fiancé. But Boulton—if not her dog—can claim top prize for her account of her bull terrier's keyhole-snooping performance in a dog show.



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Peter C. Newman

## Five decades of history

From the vantage point of this, my first column of the millennium, it seems appropriate somehow to salute, one final time, the century just past. For me, the professional highlight was my five decades of practicing the mad yet exhilarating craft of journalism, mostly for this magazine.

I joined *The Financial Post*, at its Toronto head office, on Sept. 15, 1951, as a lowly editorial workaholic, at a princely \$18.65 a month. I was just 22 and fresh out of university. My first assignment was to investigate the legitimacy of a newly arrived posse of Texas hair ranchers. When I visited their encampment, they all wore medical-looking white coats and earnestly promised to restore what they called "my cowboy glory"—a gleaming prospect, then and now. For some reason, they never contacted me again when my article concluded that the only thing that really stops falling hair is the floor.

By 1957, I had transferred to *Maclean's* and Ottawa, where I obtained one of the last interviews with retiring (by the vote) Prime Minister Louis St. Laurent. My only memory of this exchange was his insistence that he was not only bilingual but bicultural. "Don't you see," he said, "I dream in either French or English, depending on the topic." That resonated with me since I remembered first feeling Canadian, not on the day I received my citizenship papers, but on the night I started to dream in English, instead of my native Czech.

John Diefenbaker, who defeated St. Laurent in 1957, was Canada's best campaigner. I was aboard his legendary election train, jolting into small towns across the country, at 28-minute intervals. The landscape on which we moved seemed like a sequence of Kriegerhoff children run through an Iron lung. Somewhere along the route, an old man sat by the tracks in the twilight, holding a hand-lettered sign, "John, you'll never die."

Later, I wrote a book about The Chief, which he hated (though he claimed to have never read it), and when I went to cover his very last constituency campaign in 1975, I tried to stay out of his line of sight. But one evening, the 83-year-old politician spotted me, cowering in the back row of a local legion hall. "There!" he crowed. "There's that hunk of liberalism who wrote pseudo-biographies for monetary gain!" Only the last part was true, but I never felt smaller in my life.

Next up was Lester Pearson. He was my favourite politician, not because of his diplomatic skills, his honesty or his many accomplishments, but because his cabinet looked like the Titanic. I had broken to many of his government's secrets that he began one 1966 cabinet meeting by filibustering any of his ministers ever to speak to me again. One of them,

possessed by more wit and nerve than the others, responded with a straight face that since I was probably hiding under the cabinet table anyway, it might improve my temper if I was given a chair. The ministers burst out laughing when two of his colleagues surreptitiously looked under the table, to see if I was really there.

I never did make it under that hallowed table, certainly not after Pierre Trudeau took over. We had been friends while he was still a Montreal law professor, and when promoted into the justice portfolio used my columns to test some of his more controversial ideas, which provided me with plenty of juicy scoops. When he became PM and granted me his first interview, I jokingly remarked that I was happy he had won, because now I would get scoops from all the departments. His face turned into a crusader's more truth. "The first time you publish any cabinet secrets, I'll have the RCMP 'up your phone,'" he warned, and I have no doubt that he did. Still, Trudeau remains the most enigmatic and compelling of our politicians in our history.

Brian Mulroney, who moved into power in 1984, was an enigma. Above his Gucci laffs, under his presidential cuff-link, and behind his ham-scorer voice, there lurked a small-town boy from Bas-Caraïss, who had grown up with no money or privilege and developed an inferiority complex as wide as the St. Lawrence. To compensate, he adopted postmodernism that lost him the support of his electoral base. His agenda was radical and daring; he was a high-strung player who rolled the dice and lost, fulfilling Earl Bertrand Russell's wise aphorism: "Democracy is the process by which people choose the man who'll get the blame."

Two days before Jean Chrétien, our current hostage to fortune, turned 34 in 1966, he secured a promotion as parliamentary secretary to then-Minister of Finance Mitchell Sharp. His first day on the job happened to coincide with a major monetary crisis. The governor of the Bank of Canada, head of the Federal Reserve Board from Washington and other fiscal dignitaries trooped through Sharp's office, explaining the possibility of a currency meltdown to the minister, while casting dubious glances at the silent but senior new aide beside him.

At the end of the day, Sharp turned to Chrétien, and warned: "Now, Jean, you must never reveal what went on here today. It could start a run on our dollar!" "They don't worry, Mitchell," was the reply. "I didn't understand a word of it."

Looking back on these half dozen prime ministers and five long decades in the trade, there's only one thing I have learned: this country takes a lot of killing.

# The Planet Celebrates

The year 2000 comes in with a lot of bangs—but no bombs and no Y2K computer disasters



Chinese gathering on the Great Wall; marching in New York Times Square (right); Japan



By Tom Fennell

**Howard Mann laughed** as he threw himself into the fresh snow. Propping himself up on his elbows, he snapped a photo of his sons, Ben, 10, and Sam, 5, tumbling in snowdrifts in front of the Peace Tower in Ottawa, its imposing gothic skeleton reflecting the Christmas lights festooning the surrounding trees. For Mann, and many others gathered on Parliament Hill, it was not just the late of fourth end-of-the-millennium extravaganza—much less the protracted speech by Prime Minister Jean Chrétien—that brought him out of his warm living room into the cold night. Rather, he said, he



Fireworks over Parliament Hill; the Queen and Blair meet the new year (left); Sydney harbor erupts (lower right); "We're just having one big party"

simply wanted to join in celebration with millions of others on the planet, and this, he was certain, "was a great place to be."

And so it was, as people revelled under a canopy of fireworks on Parliament Hill and around the world. From the tiny islands of the South Pacific, where men blowing trumpets made of seashells first greeted the new century, to the capitals of the West, the arrival of 2000 quickly turned into the first global party. The celebration barely passed to note that the dreaded Y2K meltdown never occurred. Or that, despite fears raised by the arrest of suspected terrorists in the United States

(page 22), no bombs went off. For some, it was a time to reflect on a century that brought not only the misdeeds of massed flight and life-saving antibiotics, but also the horrors of Hiroshima and the Holocaust. As Mann watched Ben and Sam roll in the snow, he could reflect on messages of hope brought by people like 11-year-old Joanne Metcalfe, who prayed with the Archbishop of Canterbury in London: "Lord, thank you for this beautiful world," said Joanne. "Help us keep it safe for those who will come after us."

Joanne's sentiments were shared by billions, regardless of religion, as midnight rolled westward across



Reveries in Berlin, the Pope watches a show reserved for the millennium jubilee (top). Fireworks at the Eiffel Tower (right), 2000 is here, but the Y2K bug could still bite



the world's time zones. In Sydney, Australia, colorful flares exploding from the Harbour Bridge lit up the city. Near Beijing, people gathered on the Great Wall to watch the fireworks in the country that invented them. In Indonesia, where fears had run high of serious Y2K problems, none arose. Instead, people danced in the streets and celebrated at hotel balconies where all the lights stayed on. "We're just having our big party," quipped a staffer assigned Nana in Jakarta's Canadian-managed Regent Four Seasons.

Laos celebrated the pyramids in Egypt and a gala concert. In Jerusalem, thousands of extra Israeli police were deployed in the land that gave birth to Christianity 2,000 years ago. Many Christian fundamentalists believed the end of the millennium would usher in Christ's return, igniting a holy war in the Middle East. But the Messiah did not return—only a handful of disappointed souls appeared. For other believers, just walking over the hills that Christ once strode was a profound experience. "It felt right to be here," said American David Enslenged, 41, who spent the evening in Bethlehem despite U.S. concerns about possible terrorism. "This is where it all began."

In Rome, Pope John Paul II was also in a thoughtful mood as 60,000 people jammed St. Peter's Square. The first 79-year-old pontiff could have been referring to himself when he told the crowd that as the century draws to a close, "things home together the fact that time passes so quickly. All creatures are subject to its flow." The Pope, however, still plans to visit Israel in the spring, and has declared 2000 to be the church's jubilee. In France, Prime Minister Lionel Jospin cancelled a New Year's Eve party organized by his wife, Sylviane, municipal that more than 800,000 French households welcomed the millennium without electricity due to a severe winter storm. Paris nonetheless revelled in a spectacular fireworks display that turned the Eiffel Tower into a spear of light.

London, centre of Greenwich mean time, put on one of the most extravagant shows. Queen Elizabeth II, in a peach-coloured overcoat, presided at the opening ceremonies inside the new Millennium Dome—a \$1.8-billion exhibition hall at Greenwich. She looked decidedly ill at ease when Prime Minister Tony Blair abandoned protocol and grasped her hands to sing *Ashe Love Song*. But the Queen was sufficiently moved by it to embrace her husband.

## In Iqaluit, people braved howling arctic winds to hold a torchlight parade led by more than 100 snowmobiles

land, the Duke of Edinburgh, as Big Ben tolled midnight. The first city in North America to greet the new year was St. John's, Nfld., where people thronged the waterfront to celebrate. In Halifax, David Mundy, a United Church minister, his wife, Ruth, and their three teenagers climbed the steeple to the bell tower at St. Andrew's United Church. At midnight, they took turns pulling the big rope to ring in the new century.

When the grand moment arrived in Ottawa, Chretien, wearing an Inuit parka and a fur hat, mingled with nearly 50,000 revelers on Parliament Hill. In a short speech, Chretien offered a millennium gift: "Hopefully," he said, "a little bit of a tax break." Down the road in Montreal, they danced to just music in the city's old quarter, but a concert by Céline Dion at the Molson Centre was marred with sadness. The singer is taking a long break to start a family and among other fans, who paid up to \$500 for a ticket, gave her a touching ovation as Dion's eyes glistened with tears.

A massive fireworks display turned Toronto's landmark CN Tower into a fountain of multicoloured flame. In rainy Vancouver, soccer musician Therie Leif Tumi, 42, wearing a black broad-brimmed hat rimmed with silver bells, perched his own composition for the occasion. "Dream into the millennium," he sang, "grasp it in your hands." Even in the high Arctic, temperatures of -41° C and

howling winds could not keep people from celebrating. In Iqaluit, they held a torchlight parade led by more than 100 snowmobiles. And no one worried about the Y2K bug. "If the water goes out," said Mike Ferris, Nunavut's emergency measures officer, "you step outside your door and find a nice clean patch of snow. Fill your bucket and melt it."

In the end, there were only a few annoyances. In Toronto, a computer program that routes ambulances to emergency wards failed. Five U.S. nuclear power plants reported minor malfunctions in their computer monitoring systems, and in Britain, earlier in the week, thousands of debit-card machines went off line.

But the Y2K bug could still bite. Peter de Jager of Brampton, Ont., one of the foremost Y2K experts, said smaller external systems in corporations could still collapse as they came back online after the holiday season. "What to start drawing conclusions about how successful or unsuccessful we've been," he cautioned. Even so, one thing is certain: the millennium has begun on a burst of good faith.

With John DeMott in Halifax, Brenda Desrosiers in Montreal, John Goble in Ottawa, Brian Bryson in Calgary, Chris Wood in Vancouver, Andrew Phillips in Washington, Barry Coon in London and Warren Coogins in Jakarta

## A happy new year

Shirley Macklin would easily qualify as the Canadian candidate for Most Terrifying Millennium Experience. Just hours before the year 2000 began in Afghanistan, she and 154 other hostages were finally freed by killer terrorists who had held them for eight long days on a friend plane. But Macklin, a 60-year-old retired Winnipeg air dispatcher, seemed relatively unfazed by the ordeal. She told reporters she would continue working with an aid group in India, a country she has grown to love, and felt no need to return home. But she was angry. "It was a bit of a drive," she told Canadian officials as she arrived in New Delhi. And she added, to her son Harley back in Winnipeg, that her captives were "murders."

Macklin's horrific odyssey began high over the mountains of northern India. After a vacation in Nepal, she had just left the capital, Kathmandu, bound for New



Macklin (right) in New Delhi freed

Delhi aboard Indian Airlines Flight 814. From her 9C seat, she suddenly saw a missile gunnilla, one of five armed with grenades and guns, burst into the cabin from business class, spreading the food carts and ordering everyone to "keep your heads down." They busily grabbed to death one man who defied them, and ordered the pilot to fly to Lahore, Pakistan. When officials there refused permission to land, the plane chattered through three cities in the Gulf region be-

fore finally touching down in Kandahar, in northern Afghanistan, on Christmas Day.

Macklin, it turned out, was caught up in India's often deadly dispute with Pakistan over control of divided Kashmir. The hijacker, whose nationality was never disclosed, demanded the release of 35 Kashmiri militants and a Pakistani religious cleric from jail in India. After three-and-a-half days with Indian officials, backed by Afghanistan's ultra-conservative Islamic Taliban regime, the two sides agreed on release of the cleric and two militants. Indian officials accused Pakistan of backing the terrorism, but the military regime in Islamabad said it would arrest them if found. Macklin, meanwhile, was grounded in New Delhi by another sea. David, a Toronto doctor, who arranged for a secure and quiet place for her to recover.

Tam Foxall

# Border Crackdown

The arrest of suspected terrorists crossing from Canada increases pressure for tighter controls at U.S. entry points

By Andrew Phillips in Washington

Countries have their own personalities and, fairly or not, the rest of the world has certain expectations of them. England does not often appear in the same sentence as "fine dining," nor does Germany and "bunny." In the dying days of the last century, Americans suddenly found themselves making a new and jarring association. This time, it was a more unlikely combination—Canada and terrorists.

For that, thank Ahmed Ressam, Bousside-Charradi and a cast of end-of-millennium jitters that speed across the United States as the clocked ticked down to the new year. With fear fading of Y2K computer glitches, public anxiety focused on signs that terrorists might seize the moment to

strike to those warning of a threat from the north.

The most vocal proponent of tougher border controls, Republican congressman Lamar Smith of Texas, told *Motors* last week that he plans to hold a congressional hearing in February to focus new attention on the Canadian border. Smith, chairman of the House of Representatives immigration subcommittee, said the arrest means that "there's no longer any doubt about the serious threat from America's neighbor Canada." He plans to step up pressure for more police and customs agents along the border, and for implementation of a controversial measure that would track every person entering or leaving the United States. "These arrests," said Smith, "just point out how porous the border is."

The Clinton administration and many northern U.S. politicians strongly oppose the measure Smith wants to implement, known as "Section 1107" after its location in a sweeping immigration act he steered through Congress in 1996. Chimed on by Ottawa, the opponents have delayed it until March, 2001, and hope to kill it entirely. But Smith now has new political momentum to revive Section 1107.

Also helping his cause was a widespread portrayal in the U.S. media of Canada as both soft on a suspected terrorist and burning in its efforts to track them down. The conservative *Washington Times* quoted unnamed officials of the U.S. justice department on its front page as saying that "Canada's soft laws on political asylum opened a back door" allowing Ressam to enter the United States. In the *Los Angeles Times*, commentator Edward Luterick opined that in Canada, "security controls are famously lax because politically correct Canadians do not differentiate between 76-year-old Madame Dapont coming to visit her grandchildren and bearded young men from Islamic countries."

The unflattering comments were fueled by the tale of how Ressam and Charradi entered the United States after years of Iranian refugee applications in Canada. Ressam, now 33, arrived in Montreal on a false passport in 1994 and immediately claimed asylum, saying he had been falsely accused in Algeria of belonging to a violent Islamic organization. In 1995, he failed to show up for an immigration hearing. He was detained, then released and ordered to appear for



Stopped-up American checks after arrest: a new drill

monthly monitoring. When he stopped doing that, a warrant was issued in May 1998, for his arrest and deportation, but immigration officials said he could not be found.

Other agencies, though, knew where Ressam was. In June, 1998, Montreal police arrested him for stealing a computer from a car, but released him after two weeks. He even managed to obtain a Canadian passport under the name Benar Noris by using a false Quebec baptismal certificate—even though police and immigration authorities had his fingerprints on file.

In November, Ressam traveled to Vancouver and stayed for three weeks in a motel with another Algerian, Abdelmouk Dahmane. On Dec. 14, he drove a rented car to Victoria and boarded a ferry to Port Angeles, Wash. When Ressam arrived in Port Angeles, saying he was on his way to Seattle, U.S. Customs agents became suspicious and ordered him out of his car. He attempted to flee—and the agents found a cache of bomb-making equipment in the trunk. It included two bottles of RDX, a powerful explosive used by military forces for demolition, plastic garbage bags full of urea, a fertilizer chemical that can be used in explosives, and several timing devices. U.S. officials say that was enough to take out a large target, even something as big as Seattle's famed Space Needle.

Investigators in the United States, Canada and France quickly identified Ressam as a member of a violent Algerian organization called the Armed Islamic Group, known by its French acronym, GIA. U.S. officials who charged him with illegally bringing explosives into the country said he was booked on a flight to London the day after he was to arrive in Seattle—raising the possibility that he was a "mole" used to bring in his cargo for others to use. By the end of last week, officials had arrested another Algerian resident in New York City, Abdel Ghani, and accused him of plotting with Ressam to attack targets in the United States. The GIA, they theorized, may have established a base in the United States using Canada as a jumping-off point.

Ressam's arrest was enough to set off a general alarm across the United States about millennial terrorism. Seattle, already reeling from riots at December's World Trade Organization summit, cancelled its public New Year's celebration. U.S. Customs went on full alert, reinforcing the northern border and putting in place rigorous inspections that caused traffic jams of two hours or more at crowded crossings like those at Niagara Falls. Canadian officials joined in the heightened security, but with some suspicion. Allen Gaudin, general manager of the Niagara Falls Bridge Commission, said the measures were needed to reassure the public—but finally said they would not stop a dedicated terrorist, who has no need to smuggle explosives across the border. "You can go to



Ressam; Gaudin is court clerk (right) connected to Algerian militants

their nearest home-land delays at the border as U.S. Customs added some 500 inspectors, and Canadian officials stepped up security on their side as well. More ominously, though, it almost certainly means a chill along the 6,500-km border that will lie well beyond the millennial moment. Canadian officials have long fought efforts by some U.S. politicians and pressure groups to tighten border controls. Such measures, Ottawa warns, would do nothing to fight terrorism and smuggling—but might well damage trade and business and turn the kind of nerve-jangling language that plagued illegal travelers into a permanent annoyance. But the intense publicity given to the Algerian's attempt to enter the United States—in Ressam's case with enough explosive material to destroy a large building—gives new

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## Special Report

your local "Wild Man," he said. "If you want to have a fair society, this is the kind of stuff you put up with."

Concern was heightened even further by the second arrest—at a remote border crossing poster in Boulder Falls, Vt., on Dec. 15. U.S. authorities detained Chamechi, a 20-year-old Algerian refugee detainee living in Montreal, along with a Canadian woman, 35-year-old Lucie Garofalo of Montreal. American investigators said later, had crossed the United States on Dec. 6 with another Algerian and re-emerged Canada six days later. On Dec. 19, Chamechi and Garofalo were detained, and sniffer dogs used by border agents to detect explosives reacted positively to their car. No explosives were found, but the dogs can identify even tiny residues, leading investigators to theorize that the car might have been used earlier to deliver bomb materials.

Last week, U.S. authorities linked the two cases. They said Garofalo and Russian are both connected to a CIA activist named Karen Said Ammani, who at one point was Russian's roommate in Montreal. "Susan Coffin, an activist U.S. attorney told a court in Burlington, Vt., that Garofalo, whose husband is Algerian, met in 1997 in Paris with Ammani. "This is a defendant," he said, "who is working to assist terrorist organizations."

Russian, Chamechi and the others are members of Montreal's 15,000-strong Algerian community, swollen by people fleeing civil war between the country's government and Islamic radicals. But according to investigators, they are also part of a network of interest groups that use Canada as a convenient base. American critics of Canada's asylum policies quoted a recent report by the Canadian Security Intelligence Service that calls Canada "an attractive venue for terrorists"—an apt phrase because of its proximity to the United States. Until recently, says David Harris, former chief of security planning for CSIS, Canadians haven't wanted to acknowledge that. Now, he adds, "it's really therapy time." ■

## World

# Going out with the century

Boris Yeltsin's surprise resignation leaves Russia  
in the hands of a little-known ex-KGB spy

*The 128 kg truck struck Putin.  
The best and lightest caught on, but  
the president went out.*

Even as jokes like that swept their country, Russians were wondering just how radically their lives will change because of Boris Yeltsin's shock resignation on New Year's Eve. In stepping down after eight years, the aging, unpopular 68-year-old leader passed the torch to his

Yeltsin presided over an era of post-communist reform featuring practices that would be punished by prison in almost any other country. The crown jewels of Russia's economy were handed to a clique of Kremlin-connected oligarchs on the legal strength of a few presidential decrees. Last year, top Russian officials, including members of the Yeltsin family, were implicated by Swiss and Russian prosecutors in an ongoing

hope for a secure retirement nest in a Putin victory.

Putin, plucked from obscurity to head Yeltsin's government less than five months ago, was a KGB operative for 15 years, notably as the former KGB spy, and his official biography has gaping holes. But he is clearly tied to the power elite. In 1996, he worked as deputy to Kremlin property department chief Pavel Borodin, the man at the centre of the expanding corruption probe. He later briefly commanded the new Russian security agency, and then led the Russian security council, where he recruited former KGB cronies.

As prime minister, he has deftly moulded public opinion, using the state-owned electronic media and the so-far successful military assault in Chechnya to project an aura of strength and decisiveness. In December, his public approval rating hit an overwhelming 75 per cent. In parliamentary elections last month, Unity, a party whose only platform was support for Putin, took a quarter of the votes.

Despite all his election advantages, however, Putin may face tough competition. Grin-Faced Communist



Yeltsin transfers power to Putin (left) at a March election

leader Gennady Zyuganov commands Russia's biggest and most popular political party. He won more than 40 per cent of the vote in a tough 1996 race against Yeltsin. Ambitious Moscow Mayor Yuri Luzhkov could still be a threat. Former prime minister Yegor Gaidar, maverick ex-general Alexander Lebed and liberal Grigory Yavlinsky might also move into contention if Putin stumbles. In the meantime, given his relative youth and murky past, he must convince Russians that they can trust him alone in the helm for the next four years.

investigation of Kremlin corruption. Two brutal wars to crush the rebellious region of Chechnya, carried out solely on presidential authority, have killed an estimated 100,000 people so far.

Last year, Russia's opposition-led parliament narrowly failed to expel Yeltsin on five counts of treason and other gross crimes. "Of course Yeltsin hoped to finish his term in triumph and then retire on his own terms," says Boris Kapelinsky, an expert with the Institute of Comparative Politics in Moscow. "But the Kremlin inner-circle must have convinced him that now is the time to step the moment. Everything is going Putin's way right now, and Yeltsin's best

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## Germany's Kohl probed

Boon prosecutors have launched a formal criminal investigation into ex-chancellor Helmut Kohl, 69, after he admitted accepting secret campaign donations of about \$1.5 million while in office. The champion of German reunification is being probed for breach of trust. A three-week preliminary investigation ruled out payback, money-laundering and fraud.

## No bail for scientist

A U.S. federal judge denied bail to nuclear weapons scientist Wen Ho Lee, who faces 99 charges of illegally copying data. Lee has denied allegations by a congressional committee that he spied for China, and has not been charged with espionage. But the judge noted that seven computer tapes concerning weapons data are missing, and said Lee's release could result in "enormous harm" to the country.

## Earth to Hubble

American astronauts replaced all six gyroscopes and installed a new guidance unit on the 10-year-old Hubble Space Telescope, refurbishing it for another decade of interstellar research. The Hubble topped working on Nov. 15, and the successful rescue mission by the seven-member crew of the Discovery space shuttle was a welcome Christmas present for NASA after it lost two Mars probes in 1999.

## Princess miscarries

Japan's imperial household announced that Princess Masako, 36, wife of Crown Prince Naruhiko, had suffered a miscarriage, causing hopes that a new male heir might be on the way. The couple has had no children in six years of marriage, and only males can inherit the emperor's throne currently held by Naruhiko's father. The prince's brother has two girls.

## Italy Coast coup

Canada took a lead role in condemning a coup by ex-military chief Gen. Robert Gori in the formerly democratic West African nation of Ivory Coast. The United States followed Canada's lead in suspending all aid, as well as arms transfers.

## World Notes



## Havoc in Versailles's famed gardens

The historic palace at Versailles, on the outskirts of Paris, is one of several monuments suffering the wrath of a fierce storm that killed at least 329 people in seven countries. Gusting winds of up to 170 km/h knocked out power and cut a swath of destruction across central Europe. Versailles lost up to 10,000 trees, some dating to the days of Marie Antoinette and Napoleon.

## Show trial for China's cultists

Four organizers of the banned Falun Gong spiritual movement were sentenced to prison terms ranging from seven to 18 years—the most severe in a decade for political crimes—in a one-day trial in Beijing. Following the verdicts, Chinese police also arrested at least a score of Falun Gong adherents who dared to protest in the capital's Tiananmen Square, adding to the thousands of followers who have been rounded up since the group was banned as a cult five months ago.

Prescribing a minute of meditation

and spiritual exercises drawn from Buddhism and Taoism, Falun Gong has attracted millions of followers in China and abroad since its inception seven years ago. The four leaders, all members of the ruling Communist party, were charged with stealing state secrets, netting \$81 million from the sale of Falun Gong literature and abetting the deaths of 1,600 believers who were urged to forgo orthodox medical treatment. A Hong Kong-based rights group reported that one university student was sent to a labour camp for three years for posting on the Internet a picture of her arduous, unforgotten police jail time put on after the continued to practice Falun Gong in jail.

## An epic flood devastates Venezuela

In what officials describe as one of the worst Latin American disasters of the 20th century, at least 30,000 people appear to have died in the mudslides and torrential rains that ravaged Venezuela's Caribbean coast in December. In some cases, entire towns were swept away. Venezuelan authorities fear an epidemic among the 300,000 survivors, who have gone for weeks without fresh water or food. Angry officials have also taken steps to restrict "catastrophe tourism" aiming to gawk at the relief efforts.

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# The Legal Eagles

As the debate over judicial activism continues, Canada's Supreme Court justices are under scrutiny

By John Geddes

In an era when national politics is producing precious few stars, they are the unlikely new celebrities of the Christmas capital: the judges. Their appearances gave a frisson of something like glamour to Ottawa's year-end parties. There was Justice Louise Arbour, seated at a table with Queen Noor of Jordan at a Riboud & May dinner in celebration of the second anniversary of the treaty to ban land mines, conducting a long, animated conversation with international financier George Soros. On another evening, the newly appointed chief justice, Beverley McLachlin, shed some of her reserve to join the dancing at the first Christmas party held in the gleaming new U.S. Embassy House named.

There is an element of innocent stargazing—perhaps with a hint of old-fashioned sexism—on the attention paid these days when certain Supreme Court judges step out on the town. The buzz that arose when Prime Minister Jean Charest called Arbour to the court last summer, direct from her high-profile post as the top UN war crimes prosecutor in Europe, but not entirely faded. Just a few months later, McLachlin was named to replace the retiring Antonio Lamer as Canada's top judge. She is the first woman chief justice, and the first from British Columbia, and the novelty of her appointment generated interest far beyond the usual legal circles. And while McLachlin's promotion and Arbour's arrival have redefined the court's public face, the debate over how far judges should go in reshaping contentious law—notably on gay and aboriginal rights—has put real substance be-

hind the renewed interest in the court's role.

The combination of new faces and that ongoing controversy over "judicial activism" promises to keep the Supreme Court under intense scrutiny in 2000. But how will do Canadians—including pundits and politicians—understand the court? McLachlin has been given advance looks at two reports that suggest key issues of constitutional wisdom may have to be reconsidered.

A soon-to-be-published study by the Montreal-based Institute for Research on Public Policy raises questions about the widely held assumption that Canadians held judges—and the 1982 Charter of Rights and Freedoms that underpins their most important decisions—in unusually high esteem. The IRPP research, based on opinion polling, does confirm the generally high standing of the judiciary: when it comes to who should have the final say, those surveyed favoured the appointed courts over elected legislatures by a 24:1 ratio. But the study's author, IRPP research director Paul Howe and University of Toronto political science professor Joseph Fletcher, also found that Canadians—far from putting unthinking faith in the judges' wisdom—are more than capable of forming strong views against particular rulings.

In one telling example, the IRPP found that most people disagreed with a precedent-setting 1997 Supreme Court decision that threw out evidence police had collected against a suspected murderer. In what is known as the *Fernoy* case, the court found that police had entered the suspect's residence without a warrant on reasonable grounds. But Canadians apparently favour giving police more latitude: 67 per cent would not have tossed out the evidence. "It does make some sense," Howe and Fletcher conclude, "that critics of judicial activism might arise upon the facts of a case like *Fernoy*'s to lambaste the court and the charter."

In the second study, slated to be published in an upcom-



Kelly's close examination of hundreds of rulings also suggests that widely reported views of some individual judges may be off-base. When McLachlin was appointed chief justice, she was generally described as a more balanced judge than Lamer, who was seen as the leader of the court's liberal, pro-charter faction. But Kelly's research does not support the impression that McLachlin tends more to judicial restraint. He found that from 1993 to 1997, McLachlin supported rights claimants 37 per cent of the time—as did Lamer. And both did so much more so than the court's restraint-minded conservatives, notably Justice Charles Gauthier, who sided with the pro-rights camp just 23 per cent of the time.

Opponents of judicial activism will point to

evidence that McLachlin might be just as liberal as Lamer. And there will be no shortage of cases this year to keep the court in the crosshairs of such critics—starting almost immediately. Around the middle of this month, the court is expected to hear the appeal of last year's explosive child pornography case—in which a B.C. judge ruled that a federal law banning possession of child pornography violates the right to freedom of expression. Then, in February, McLachlin's court will

## The voting record

New Supreme Court of Canada Chief Justice Beverley McLachlin (left) has been touted as a more restrained judge than her predecessor, Antonio Lamer, who was seen as the leader of the court's pro-Charter of Rights faction. But according to a study to be published in the *Osgoode Hall Law Journal*, from 1993 to 1997 McLachlin ruled in favour of three claiming charter, aboriginal or other fundamental rights 37 per cent of the time—as did Lamer. In contrast, conservative Justice Charles Gauthier sided with the pro-rights camp 23 per cent of the time.

confront the politically charged issue of gun control when it hears Alberta's argument, supported by three other provinces, that Ottawa's new law on licensing and registering firearms infringes on provincial jurisdiction over civil and property rights.

With these and other hot-button cases coming up, the judges could be tempted to go some distance to avoiding public outrage before they pen key decisions. Those hoping for a shift towards that sort of caution were given cause for optimism in late December, when Charest named court warden by appointing the reformer Justice Louis LeBel to the Quebec Court of Appeal to fill the gap left by Lamer's exit. LeBel had a low profile and is seen by lawyers as a cautious interpreter of the charter. Charest's move over bigger issues, notably LeBel's appeal court colleagues Mogens Fisk, Michel Proulx and Michael Robit, but it is not clear that



LeBel's recent addition to the court is seen as a cautious counterweight of the charter

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## Canada

Charlton's choice shows he is striving to build a more reserved bench: the Prime Minister may have been trying to avoid awarding the lobbies that had grown up behind those more highly sound conceptions—a strategy he appeared to follow once before, in the surprise 1998 selection of Ontario judge Ian Binnie over candidates who were being aggressively promoted.

Advocates of an activist court—one unconcerned about the political fallout of contentious rulings—worry the top judges will start second-guessing themselves. "I think we need a stronger court as we enter a hothouse period for the judiciary," says University of Toronto political science professor Peter Russell, a veteran Supreme Court watcher. Russell is not sure McLachlin is taking over a bench that has displayed the necessary backbone. He chides the court for its unusual reaction to the uproar that followed its ruling last September in the so-called Marshall case on year-round aboriginal fishing rights in Nova Scotia. On Nov. 18, the judges issued a rare clarification, criticizing native groups for interpreting the ruling too broadly, and stressing that Ottawa has the power to regulate the native fishery.

"They went to lengths not just to clarify, but to coach the government on what to do," says Russell. "I thought it was a sign of a court that was not sure of itself." Those in the opposing camp, who see the judges as far too quick to curtail new rights, also seized the fishing debate as a possible turning point. "I think the Marshall case may have undermined the court's credibility," says Christopher Manfred, a McGill University political science professor and one of the sharpest critics of the court's record in reshaping law. With the Marshall case, the Lamar on drew to an uneasy close. Now, the question is whether McLachlin can quickly restore a sense of surefootedness. At the same time, with its docket promising plenty more, she may look back to 1999's year-end parties as the calm before the legal storm of 2000. **ED**



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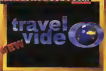
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Bruce Wallace

## The Rwanda debacle

The independent inquiry commissioned by the United Nations into its own handling of the 1994 Rwandan genocide reported last month, and revealed little new about what led to one of the century's worst mass murders. The inquiry never breached the closed club of the Security Council so we are to wonder about why great powers like the United States and France chose to watch the Hutu slaughter of the Tutsi minority on CNN rather than intervening. Instead, the inquiry slapped offhanded blame around the United Nations—namely Secretary-General Kofi Annan, who headed peacekeeping operations at the time, and Boutros Boutros-Ghali, his predecessor as secretary general—then indicted the usual bureaucratic suspects: poor communication, bad information and decision-making inertia.

At least Lt.-Gen. Roméo Dallaire, who commanded the overblown UN mission in Rwanda, can take solace from the findings. Slit-haired by the memories and might-have-beens of that awful time, Dallaire emerges as a hero, a lonely, brave voice calling for courage and action in the midst of hell. His only sin, says the report, occurred before the killing began, when he failed to copy more people at UN headquarters with his furious fax containing an informant's warning that the genocide was being planned. That Dallaire is merely guilty of bureaucratic sloppiness is a clear rebuke to his critics, who have panned over the months of the Rwandan genocide believing if they looked hard enough they'd find the one or two people who, if only they had acted, could have stopped the killing. Perhaps they must, but if so, they were operating from positions of real power in Washington and Paris, not the remote UN camp.

The attacks against Dallaire were spearheaded by Belgian politicians anxious to avenge Belgium for the deaths of 10 of their peacekeepers—an undeniably emotional bet, in a mission that left 800,000 Rwandans slaughtered, slightly below

the point. The chase was taken up by some Canadian journalists who, from the sanctuary of hindsight, took issue with Dallaire's performance the day the Belgians were killed. They also questioned the role of Gen. Maurice Baril, Canada's current chief of defence staff who was the senior military officer at UN peacekeeping headquarters at the time. The premise behind this crusade was that UN staffers withheld crucial information from the Security Council until it was too late to stop the killing.

That silly assumption has unnecessarily consumed Dallaire for five years now. The main players in the drama—the French, American and Belgian governments—all knew exactly what was unfolding. Not only did their embassies have their own superior local intelligence, but Dallaire, an Annan's officer, passed along the informant's allegations to those embassies. If anyone wanted to know the Security Council's true intentions towards Rwanda, they had only to look at how it responded once the actual genocide began. There was evidence of the Hutu sins, and the past proven choice to look away.

The inquiry would have had more value if it had uncovered the Security Council manoeuvres that led it to abandon civilians to the slaughter. But the Security Council did not co-operate. One can only wonder how Madeleine Albright, the "humanitarian hawk" on Kosovo who, in 1994, was Washington's UN ambassador, would have explained the result. But the report does, at least, expose the cynicism of the Belgians, who have so vociferously pursued Dallaire. As Rwanda exploded, Belgian diplomats urged the Americans to pull out the entire UN mission, while some Belgian troops on the ground abandoned Dallaire's already thin mission in order to conserve their own nationalities. That the Belgians then attempted to lay off blame on one of the few heroes of the piece is an obscene coda to a terrible story.

## Baiting out

A provincewide smoking ban took effect in British Columbia with the start of the new year. Under the new rules—the toughest in Canada—smoking is prohibited in all institutions that employ people, including bars and restaurants, unless owners can provide separately ventilated rooms designated for smokers. Meanwhile, anti-smoking activists blamed a decision by Parlo Canada to allow the filming of a Marlboro cigarette commercial in Jasper National Park. The shoot took place last month.

## Lockout in British Columbia

After warnings of dire consequences for the British Columbia economy, who aimed at ending a lockout at B.C. Rail, the country's third-largest freight railway, collapsed. The company has said it wants to streamline its operations, a plan that could result in a 20-per-cent reduction in its 13,000-strong workforce. Forestry firms accuse it for about half of B.C. Rail's business.

## Ruling against French-only

A Quebec Superior Court judge ruled that the 1997 sale of an anglophone woman's house for unpaid taxes was illegal because the notice she received was in French only. Sheikha Soudani's \$80,700 property in Chambly, just east of Montreal, was sold in 1997 for \$1,500. Although Quebec's language laws say that authorities are not required to write in English to people who address them "in a language other than French," Justice Jean-Guy Dubois ruled that "a letter about a sale for overdue taxes isn't an ordinary notice, like the circulars that the administration sends out about services."

## Be prepared

More than 3,000 icy souls from 50 countries arrived in Quebec City for a parabute, the first ever to be held in winter. Some got more than they bargained for: the snow was no ice kept at 10° C, but with the outside temperature dropping to -33° C with wind chill, and with some hours not fully operational, dozens of souls were treated for hypothermia, as well as colds and coughs. Still one soul leader from Quebec. "The first night was hell."

## Canada Notes

### Heat wave across the Prairies

Warm air rolled across Western Canada for part of last week, smashing December temperature records in many communities. Alberta was the hot spot in Calgary, the temperature hit 19.5° C, ending the previous record set in 1898 of 13.3° C. In Edmonton, the temperature hit 16.7° C, another record, prompting Rochelle Loewen (left) to exchange her skis for beachwear on the slopes of Snow Valley ski club. The hottest place on record last week was Glenora, 120 km south of Calgary, at 26.9° C. In some areas, the warm weather resulted in grass fires. Colder weather returned to the West later in the week.



### A firebombing in Vancouver

Police continued to investigate the Boxing Day firebombing at the Vancouver constituency office of Ujjal Dosanjh, attorney general of British Columbia and the acknowledged fire-rat of the province's New Democratic Party. No one was injured in the attack, which took place at about 5 a.m. when someone broke a window and threw in an incendiary device. Dosanjh refused to speculate about who might have been responsible, but over the course of his political career he

has often been controversial. More recently, during his campaign to replace disgraced former premier Glen Clark, he has bolstered the ranks of the NDP with new members, predominantly Sikhs who support him, angering others within the party.

But Dosanjh, himself a Sikh, has generated anger within his own ethnic community as well. In 1985, he was assaulted and required more than 50 stitches. Although no one was arrested for that attack, it may have been prompted by Dosanjh's criticism of extremist Sikh militants. As attorney general for the past 6 years, Dosanjh has also drawn attention with his tough anti-crime stance.

### Harris stokes the flames over taxes

For the second time in December, Ontario Premier Mike Harris blasted the federal Liberals' tax policies in a letter to Prime Minister Jean Chrétien. He took aim at payroll taxes, which, instead of going down, will undergo a net increase as of Jan. 1 (although Employment Insurance premiums will decrease, that will be more than offset by a rise in Canada Pension Plan premiums). In his letter, Harris said that, for some, the increase could represent "the cost of baby diapers for six weeks. For others, it's gas for the car for one month."



Craig estimates of nearly 850,000 visitors to his site

distributed them without paying for the programming. Bill Sweetman, vice-president of strategy at Multi-Mediator Strategy Group Inc., a Toronto-based research firm, says the buzz surrounding iCraveTV boils down to its parent, TVRadioNow Corp., and for a possible future sale or public share offering. Sweetman is convinced the company has properly exploited the Copyright Act. "Craig and his legal advisers have identified a legal loophole," says Sweetman, "and pretty well driven a Mack Truck right through it."

The courts have yet to determine whether the Copyright Act has such a loophole. For the time being, though, Craig is exploiting this legal grey zone in the following manner: iCraveTV uses two antennas in Thornhill, Ont., 20 km north of Toronto, to capture Canadian and U.S. TV signals off the airwaves originating in Toronto, Barrie, Ont., and across Lake Ontario in Buffalo. According to the Copyright Act, it is not an infringement of copyright for a so-called retransmitter to take such signals and rebroadcast them live without alteration. This is, in part, what cable companies do now. But unlike iCraveTV, cable companies pay a tariff for every subscriber who is out of the range of airborne signals.

That tariff is then shared among copyright holders in Canada, and is worth about \$50 million a year. Craig says he is willing to pay such a tariff, but iCraveTV's critics liken this to sending a cue, then offering to pay for it.

Clearly the whole business, in which Craig says he and fellow investors have sunk \$12 million, is fraught with legal questions. Visitors to iCraveTV's site must read a legal disclaimer about 3,000 words long. It says anyone who wants to watch iCraveTV, which began broadcasting on Nov. 30, must reside and use a computer in Canada. Viewers are asked to provide their telephone area code as verification.

Dennis Wharton, senior vice-president of corporate communications at the National Association of Broadcasters in Washington, scoffs at the security measure, saying nothing prevents Internet users anywhere in the world from entering a phony Canadian area code. "The safeguard against theft of the signal from U.S. stations," says Wharton, "is close to being a joke."

A potential question in this high-stakes legal wrangle is whether iCraveTV qualifies as a retransmitter the way cable companies do under the Copyright Act. The act states what a retransmitter is not, but not what it is.

Michael Bouchard, general counsel for the Copyright Board, the federal regulator empowered to establish the tariffs to be paid for the use of copyrighted works, says the law will decide. "iCraveTV Corp. may not be a retransmitter, we don't know," says Bouchard. Asked who will answer the question, Bouchard replies, "Ultimately the board, ultimately a court of law."

Late May, concerned over hindering the competitive advantage of new media services, the Canadian Radio-television and

Telecommunications Commission announced it would not regulate the Internet. Then on Dec. 17, while the controversy surrounding iCraveTV raged, the CRTC by coincidence issued a public notice stating it will exempt all new media broadcasters from acquiring a broadcast licence. The decision, say industry observers, will play a prominent role in determining whether iCraveTV is in breach of copyright.

For all the fuss surrounding iCraveTV, what viewers often see is of decidedly mediocre quality. Without a high-speed connection and a powerful computer, the picture is jerky and the sound just adequate. Still, that hasn't stopped people from swarming the site. Craig estimates that as December, iCraveTV will have passed close to 800,000 different visitors for such hits as *Ally McBeal* and *The Practice*. "The interesting thing about the Internet," says Craig, "is that the person who can get there first tends to hold the position."

For the time being, Craig plans on selling banner ads for the site to generate revenue. This month, he expects to announce a new venture in which iCraveTV will broadcast video of Toronto-based executives reporting their quarterly results. He also wants to negotiate deals to broadcast specialty channels.

## How to log on and tune in

**Watching television** on iCraveTV.com is similar to watching TV in the early days of black and white, says William Craig, iCrave's chief executive. The experience depends, he says, on the quality of the equipment used to watch. To get started, viewers need a current copy of RealPlayer, which can be downloaded free from [www.real.com/players](http://www.real.com/players). (Unfortunately, running RealPlayer requires a lot of computer memory, and on older systems makes other programs either sluggish or even impossible to operate.) To get the most out of iCraveTV, Craig recommends the following:



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Processor: Pentium 200MHz MMX  
Sound: Any quantized with speakers  
RAM Memory: 32 megabytes  
Operating System: Windows 95/98/NT

**FOR A MAC**  
Processor: PowerPC  
Operating System: Mac OS 8.1  
RAM Memory: 32 megabytes

There are plans to raise an antenna in Vancouver early in the new year to receive the city's broadcast signals and those originating in Seattle, which will no doubt raise the ire of most copyright holders. "Some of the broadcasters going after William Craig are underestimating him as an opponent," says Sweetman at Multi-Mediator. "He's not a 21-year-old geeking in his basement. He's an accomplished professional who has done his homework." Now, Craig is out to teach others a lesson. ■

## Business

# A Signal Change

'Web-caster' iCraveTV has attracted lots of attention—and controversy

By Dunley Howeslethika

William Craig's red eyes betray how busy he has been lately. He gets no human sleep most nights, but says it doesn't help when overtaken media phone at 2 a.m. for an interview. Still, all the attention that comes from holding a hot hand as an Internet upstart is unquestionably flattering. As the founder and controlling shareholder of iCraveTV.com, Craig is the frontman for the bold Toronto-based company that streams television signals across the Net. There's just one problem: Craig never bothered to ask producers, broadcasters and a host of other television industry players whether they would mind if he rebroadcast their copyrighted programming without paying a cent.

It turns out they mind very much. So far Craig has received

(and ignored) cease-and-desist letters from the Canadian Association of Broadcasters, the Canadian Film and Television Production Association and four broadcasters in Buffalo, N.Y., among others. Neither will he be swayed by the New York City-based National Football League, which also demanded iCraveTV stop what it is doing. "The NFL has to realize that in Canada we have different football rules," Craig says. "We also have different copyright rules."

How those rules apply and to whom will keep lawyers busy in the coming months. Industry watchers now expect copyright holders to sue iCraveTV for infringement. Meanwhile, Craig, 46, has garnered a lot of attention by doing something no one else has: "Web-casting" 17 TV channels—including CBC, CTV, ABC, CBS, NBC, PBS and Fox—live and for free. Craig, a former program director and special marketing manager for what is now Rogers Communications Inc., owner of *Marlin*, claims what he is doing is perfectly legal. He says it is no different from what cable companies did more than 30 years ago when they first snatched TV signals off the airwaves and re-

## On track to creating a rail colossus

**Canadian National Railway Co.** and Burlington Northern Santa Fe Corp. said they plan to join forces and create the largest railway in North America. The new Montreal-based North American Railway Inc. would be a freight-hauling colossus, with annual revenues of about \$18.5 billion and 67,000 workers. Best reaction so far: The \$6.7-billion deal was announced on Dec. 20 has ruffled from lukewarm to outright negative: many Americans are dismayed by yet another restructuring of the industry after earlier ones were misadventured, while Canadian railroads see it as further evidence that U.S. interests



BNSF merger in focus on \$6.7 billion deal with CN

Robert Krebs, who would become non-executive chairman of the new company, shippers will find seamless coast-to-coast service will be cheaper and more predictable.

The efficiency argument is meant to address the concerns of investors and customers in the United States, where

coastal consolidation in the industry led to massive freight job-ups and delays on tracks. To assuage Canadian concerns, the new company's head office is to be in CN's home town, not BNSF's headquarters in Fort Worth, Tex. As well, most of the 15-member board of directors will be Canadian residents, including Paul Tiller, who will become president and CEO of the new enterprise as well as of CN.

## Financial Outlook

**Analysts predict** that after years of growth, the Canadian economy will continue to grow at a healthy rate for at least two more years. According to

### FUTURE BUSINESS PROSPECTS

Forecast percentage increase for selected Canadian economic indicators

	2000	2001
GDP	3.8	3.8*
Government spending	2.4	3.5
Business investment	5.8	6.3
Corp. profits	12.0	8.0
Real disposable income	3.3	3.8*
Average hourly earnings	3.2	3.2

the CIBC, the economy will grow by 3.5 per cent this year and by 2.8 per cent in 2001. "We've got a broadly based expansion in Canada," said Joshua Mendelsohn, the CIBC's chief economist. "So the outlook is very positive in the sense that there are a lot of different forces at play." These include the continuing strength of the U.S. economy, which buys Canadian exports, and the sharp rise in employment in Canada, which generates a buildup in disposable incomes. He added the move into Asia and strengthening in Europe should lead to higher commodity prices.

## A new airline era

With Air Canada's \$90-million takeover of Canadian Airlines set to be finalized this week, ripple effects were being felt. Ottawa approved the takeover on Dec. 21, but gave the Montreal-based carrier until the first week of March to divest itself of its former rival's affiliate, Canadian Regional Airlines. A spokesman for the profitable Calgary-based feeder operation promised that business would continue as usual. Meanwhile, as one of Air Canada's conditions for the takeover, Canadian's 12-member board is expected to struggle, effective this week. Spokesmen for Canadian's unions, which held four of the seats, said they are contemplating a challenge to the resignation before the Canada Industrial Relations Board.

## Wal-Mart shrinks to grow

Wal-Mart Canada Inc. is opening a 5,000-sq-metre prototype store in Kapuskasing, Ont., a town of about 10,000 located 675 km north of Toronto. If the foray—about half the size of its regular stores—proves successful, the giant U.S.-based retailer will use it as the model to move into small-town Canada as a big way.

## Dialing up competition

The competitive U.S. long-distance market has a new player. Philadelphia-based Bell Atlantic, one of the so-called Baby Bells divested from AT&T in 1984, plans to offer long-distance service that works in the \$12-billion-a-year New York state market. AT&T filed a motion in a U.S. appeal court to try to stop Bell Atlantic from making the move, claiming its former subsidiary filed to clear all its regulatory hurdles.

## Too much revealed

The U.S. Securities and Exchange Commission charged a New York City investment banker with insider dealing, claiming he revealed all to a Canadian power star. The SEC also charged Katherine Gannon, 39—known as Marilyn Star in the porn biz—with illegally using the information, saying she pocketed \$132,000 in profits during a 14-month relationship with James McDermett, 48, the former CEO of Kraft Foods & Foods Inc.



## Ross Laver

# 'Trees don't grow to the sky'

**Gordon Cheesbrough has a problem.** It is happening at the kind of problem most of his competitors in the Canadian mutual fund industry would grow their right arms to have. But the way Cheesbrough sees it, that doesn't make any sense of a concern.

Here's the thing: since launch 13 months ago, the \$308-million Almaria e-Business Fund has generated a return of 208 per cent. Suppose you, Mr. or Ms. Savvy Investor, had put in \$10,000 at the outset. As of last week, your stake would be worth \$36,280, after management fees. Chances are, you wouldn't be phoning in to complain.

So why is Gordon Cheesbrough, the 47-year-old president of Toronto-based Almaria Investment Services Inc., worried? Simply because he knows that thousands of other investors, hungry for similar returns, will be tossing money his way this RRSP season. Which is fine, except there are no guarantees when it comes to stocks and equity mutual funds. There's an old Wall Street saying that tends to apply in these sorts of situations: "Trees don't grow to the sky." Will the e-Business fund, which invests in companies positioned to benefit from the Internet and digital technology, do as well this year? Perhaps, but it's a long shot. Although such stocks performed spectacularly well in 1998, sooner or later the party is going to end. And when it does, a lot of investors—especially those who aimed the early run-up—are bound to be disappointed.

"The thing you worry about," says Cheesbrough, talking about the e-Business fund, "is you hope everybody doesn't think there are repeatable numbers, year in and year out. We're being very lucky, and our guys are smart and they've done a great job. But the reality is we caught the swings and roundabouts pretty well."

And not just with that one fund. The Almaria Science and Technology Fund gained 145 per cent in the 12 months to Nov. 30, while the Almaria Japanese Opportunity Fund returned 113 per cent. Four other funds—the company offers 39 in all—reported 12-month increases of 90 per cent or more. The company's biggest fund, Almaria Equity, with \$1.5 billion in assets, was close behind at 36 per cent.

Add it all up and the Almaria story sounds pretty impressive. In terms of fund performance, the company hasn't looked this good since the early 1990s, when Almaria Equity, under former star portfolio manager Frank Mench,

racked up three consecutive years of gains exceeding 30 per cent. In those days, Mench was arguably the best-known fund manager in the country and a hero to tens of thousands of Canadians. Almaria, the little no-load company that could, was one of the hottest firms in a hot sector, attracting a flood of investors' money. The Toronto Dominion Bank, eager to grab a larger piece of the fund business, let it be known that it was willing to buy the company for \$765 million in cash and stock.

And then the wheels fell off Almaria's bandwagon. In the fall of 1996, TD Bank, for reasons that have never been fully explained, suddenly withdrew its takeover offer. Manufacturers Life Insurance Co. Ltd., with the support of Mench and most of the other fund managers, stepped in with a lower offer and promptly ran into a wall of opposition from the company's then-chairman, Ron Mench, and its major investor, Montreal-based Almaria Capital Corp. As the fighting spilled over to the courts, Mench made an ill-fated bet on resource stocks instead of the financial sector, causing Almaria Equity to underperform the market. Criticized by some investors, Mench also became a target of the Ontario Securities Commission over his personal trading in a penny stock and was temporarily banned from trading in the investment industry. He left Almaria in May, 1998, and now runs a hedge fund for wealthy private investors.

**Suffice it to say,** the past few years have not been kind to Almaria, which has slipped from being Canada's third-largest fund company to number 19. But under Cheesbrough, a former Bank of Nova Scotia brokerage chief who took over as Almaria's president since early 1998, things have been looking up. In the past 13 months, Almaria has launched eight funds and four new specialty funds, including e-Business. There's also a new managed-portfolio program that makes it easy for investors to choose their funds. The company won a major award for customer service recently, and its top managers, Jan Atkinson, was named fund manager of the year by a panel of industry analysts. In November, the firm reported its best monthly sales in two years, which suggests well for the current RRSP season.

Cheesbrough and his team deserve credit for managing Almaria's turnaround. Their biggest challenge now, naturally, is to manage investor expectations.



Cheesbrough returns can be too good

LOOKING INTO THE FUTURE

Cover

By Robert Shapard

# Medicine in 2020



Remote operating console for controlling robotic arm in any-very fibre-optic light and camera that peer inside the body (above) looking for an almost overwhelming pace of discovery

**Pushed on by the** unfolding power of the microchip and the unlocking of humanity's genetic code, medical science is poised for a giant leap forward. But what will the future bring? With the help of research scientists and physicians at the vanguard of their craft, we invite readers to step forward 20 years, to a day in the life of ordinary and extraordinary medical achievement.

She has always loved mornings, the calmness of routine. So when the old house aches a bit more with each new day? The kids are starting to bug her about moving into one of those new senior residences for baby boomers—what an awful designation to carry into your 70s, thought Jeanette T. She's durned if she's going to live in something called Elvis House. Of course, the kids mean well. They've seen the on-air nursing stations and the beds that perform a complete without check while you just lie there. But these Much More Health residences are for old folks—or for her. Jeanette is content with her regular video call to the public-health nurse, and transmitting her own vital signs from the home monitoring machine while they talk—she just has to rest her fingers on a pad, for heaven's sake. And her diabetes is certainly under control.

She laughs at that. Was it only 20 years ago, at the turn of the century, that she was still pricking her finger every day to check her glucose level? Standing at her jewelry drawer, she confirms a number of choices. The wristwatch that measures her sugar levels through her skin and signals the artificial pump in her pancreas when it needs to supply more insulin? Or the fancy new Cartier earrings with the infrared sensor that the kids gave her at Christmas? The beanie grandma, she chuckles to herself. All her friends seem to be wearing medical sensors in their jewelry for one thing or another—pacemakers, irritable bowel syndrome. Even the memory glasses that her friend with Alzheimer's wears—with the micro-camera programmed to recognize faces and familiar locales—are becoming stylish.

The knock on the door jolts Jeanette from her reverie. The police officer (yes, they seem to be getting younger all the time) is very considerate, her 37-year-old son, Peter, a geologist and pilot, has been forced to crash-land his small plane in northern Saskatchewan. No one else on board was seriously injured, but Peter may have damaged his spine and appears to have suffered a heart attack. The medics don't want to move him. In fact, they want to operate there. He is in a thermal tent and perfectly comfortable. They are flying in a surgical robot from Yellowknife. With a specialist anesthesiologist, a surgeon born in Toronto can perform the operation. Would she like to come to Central Hospital for a personal consultation?

Jeanette hasn't been in a hospital—or a doctor's office for that matter—in such a long time. Almost everything can be done more conveniently by video calls, or by video e-mail over the Web. Of course, she goes to the local wellness centre for her annual MRI scan. She has also overstepped at the Cancer Centre when her late husband was a patient there, and visited the birthing centre—such a nice place now that it is being co-managed by a local doctor—when her first grandchild was born. And she likes to tour the health centre with her friends at least once a week. Some of them were full-service hospitals once. Now they are a mix of government-run wellness centres, corporate laser surgeons and alternative medicine boutiques. A great place to shop for gifts, or to take a mid-afternoon tea break.

At ground level, Central Hospital has the feel of an old-fashioned university campus—lots of ivy buildings joined by climate-controlled pathways. Jeanette is surprised at the number of people smoking cigarettes outside the main entrance. Young people, too. She thought more people had vaccinated their children against tobacco. The restrictions were such a relief a decade ago, before some civil rights advocates complained it was unfair to ban smoking children against tobacco products before they had reached the legal smoking age of 21 and could decide for themselves.

The information desk directs her to the tele-surgery floor. First, she has to

# 'In 10 years, we should be able to detect disease at the earliest stages and introduce a gene product to block it'

pass through the fluorescent chamber. Hospitals have reason to be ultra-cautious: there are so many drug-resistant diseases making the rounds. The duty nurse tells her that super-stuffers in the elevators and overhead air ducts can direct against airborne bacteria and viruses, they will inform her which ones are left open to correct.

Joanneau uses her health card to enter the care portion of the hospital, careful not to walk on the magnetized tracks that the robotized metal trays follow. She could leave simply using her fingerprints for access—this is Ottawa, after all, where the low-and-order proponents are keen on bio-identification. But like many Canadians, she values confidentiality, so all her health-system dealings are on a card that only she, her family physician and her designated health advocate can access.

On the surgical floor, she finds subtidal lighthearted, unadorned doctors, doctors smiling about in lab coats and casual sweaters—there is barely a white pocket in sight. Dr. Torn, the

doctor of high-intensity magnets. "Your son has two serious medical conditions to deal with," Dr. Torn is saying. "The crash may have damaged some of the nerves in his spinal column and he suffered a minor heart attack because of the trauma. That is not an unusual reaction."

The heart attack is not a great concern. Joanneau knows there are so many ways now to deal with damaged muscle. When the school principal up the street had his heart attack the previous year, his cardiologist injected genetically engineered muscle cells from a calf back into the damaged area, where it began to grow new tissue. This, Dr. Torn is saying, is what they intend to do with her son: muscle tissue matching her son's DNA is being flown in from a Vancouver cell bank, the repository for Western Canada. The spinal cord is another matter entirely.

Medical science has made tremendous strides in recent years but Joanneau knows the brain and nervous system still hold her mysteries. A few years back, her son had taken her to see *Superman III*, with a cameo appearance by the graying Christopher Reeve walking again under his own steam. But this was a rare achievement for someone who had broken his neck in 1995, and followed years of intense muscular therapy and experimental treatment.

Sensing Joanneau's anxiety, the young tele-surgeon tells her not to worry. The St. Joseph Regional Hospital in Yellowknife, which flew in the robotic equipment, was one of the pioneers of disease medicine at the turn of the century. Its techniques will insert the tiny scalpels and laser arms through a few pre-sited punctures in her son's body. A surgeon in Heidelberg, Germany, Dr. Gertl, has developed a new technique for bathing damaged nerve endings in a chemical gel, coating them to sprout new connections. She will be at the main controls. "From Germany?" Joanneau asks. "Oh, she is the best in the world," the young doctor replies. "We will assist her from here."

Of course, he also likes the idea so much of spending at the Canadian frontier that she has even agreed to waive her usual international fee. You know how romantic some doctors are.

Joanneau is told that her daughter-in-law can be drilled into the procedure as well. "You can watch the entire operation from one of our family viewing rooms down the hall, or from home if you prefer," says Dr. Torn. "You'll be amazed at how clear the images are. These new laser optics, they can see right through blood."

**For-deshell?** Maybe not. All the elements described in the predicted 2020 scenario are either in limited use now or in advanced stages of research and testing. The massive changes that emerging equipment such as ultrasound and magnetic



Practicing with hepatic surgical device at St. Joseph's Hospital in Hamilton: minimally invasive techniques

resonance brought to health care in the 1980s and '90s will almost certainly pale beside the miniaturized hand-held sensors being developed. They can provide doctors—and borne diagnosis—with an up-to-the-minute wealth of medical insights. New pharmaceuticals already under development promise to reduce the incidence of blocked arteries and strokes—and maybe even cancer, by blocking off a tumor's blood supply. One day, perhaps, they will make surgery for many conditions obsolete.

No one expects disease to be eradicated this century—cigarette smoking alone is expected to reach 10 million lung cancer deaths annually by the 2020s, 70 per cent of them in developing countries, but physicians are beating themselves for an almost overwhelming pace of medical discovery. There are currently about 200 new cancer drugs (in the final stages of trial and approval in Canada and the United States. Research under way by university scientists and biotech companies is certain to be bolstered by the new knowledge of disease mechanisms that the Human Genome Project, the mapping of the body's genetic code, will bring over the next few years (page 44). For 2,500 years, western medicine has been largely focused on finding the appropriate poisons, whether from bacteria, fungi or plants, to attack disease. Tomorrow's medicine seeks to understand the body's own internal mechanisms that nurture disease—and to find how to switch them off.

One important advance, however, is already well on its way. Dramatically slowed. Scientists have already discovered a so-called Michaelis gene in four flies and—a Canadian first—use close to deciphering the mysteries of the end box of human cells that control decay and regeneration. With the growth of mechanical and genetically engineered organs, some efforts are already talking about an era of "trans-humans," where new anti-aging devices and implausible artificial intelligence may produce a quantum change in the species.

Towering the new millennium medicine are two high-tech revolutions from the tag end of the 20th century—in genetics and computer technology—that have doctors for the first time looking seriously beyond the borders of disease. "Cuzes aren't really our final destination," observed Dr. Thomas Raddon, president of the American Medical Association, at the more sprawling of a massive study into the future of medicine. Instead, he said, prediction and prevention are the new focus.

Dr. Cal Siller has some impressively specific predictions. "Within three to five years, we will see individual 'bio-chips,' smart cards the size of a credit card," says the former transplant physician, now CEO of the Canadian Medical Discovery Fund, a venture capital group that helps market health-care breakthroughs. "They will include a person's genetic code on which you can layer a drug—as many as 10,000 drugs—and test it instantly for reason and effectiveness." That is already being done on a limited scale, says Siller. "In 10 years, we should be able to detect diseases or the possibility to develop serious diseases at the earliest stages and introduce a gene or gene product that will block its development," he adds. And for those who already have a serious disease, "line robots can be introduced into a blood vessel to stem out a blockage and paint the site with healing genes." Says Siller: "The diagnostic tools that are becoming available are so much more powerful and immediate that they're mind-boggling to me—and I'm unimpressed in this stuff."

For a glimpse in a future that can be realistically envisioned over the next 20 years, consider that in September, surgeons at University Hospital in London, Ont., performed the world's first coronary bypass on a beating heart using a surgical robot that operates through a tiny opening in the chest and responds in part to voice commands (page 58). Those surgeons were in the same room as the patient during the operation, but an theory there was no need for them to be on the same site. What's more, the new minimally invasive techniques offer much shorter recovery times and a savings, being able to do more delicate surgery on sicker, more frail patients who might not be able to withstand the trauma of conventional open-heart surgery.

Parasites use the fruits of the computer and biotech revolutions leading to huge waves of shared health information, increased consumer demands for the best service (and privacy), globalized offerings, and health-care delivered as a matter of course right to the home or workplace. "I am absolutely convinced that I will see a world of virtual hospitals and telehealth care within my lifetime," says 68-year-old Robert Fillet, a respected former chief surgeon and director of telehealth at Timon's Hospital for Sick Children.

**Joanneau must have drifted off.** A nurse is reaching her shoulder. "We have your daughter in Calgary on the line, and your son is right next now," the nurse says. "You can have some time together before the operation." Two screens map to life with images of her grown children. Her daughter, she can see, has been crying. Her son is much more apologetic. He has sensations in his fingers and hands; the damage, he is assured, is not severe. In the background can be heard the voices of pediatricians naming their final checks on the connections and equipment. From somewhere come faint sounds of a Muslim woman and voices in another language. The Muslim women more often than usual, and for that Joanneau feels oddly reassured: these are the confident notes of someone else's daily routine. ■

## VISIONS OF 2020

Based on research already well advanced, scientists confidently envisage stunning changes in the health-care system of the near future:

- Most medical matters are handled conveniently by video calls or e-mail.
- Cancers are stopped at an early stage by drugs that cut off their blood supply or an immune system trained to kill cancer cells.
- Cardiologists repair damaged hearts with genetically engineered muscle cells obtained from a cell bank.
- Robotics are used locally and across great distances for myriad hepatic surgery procedures.
- A wristband measures a diabetic's sugar level through the skin and signals an artificial pump in the pancreas when to supply insulin.
- The effectiveness of thousands of drugs can be checked instantly on a smart card the size of a credit card that carries a patient's genetic code.

tele-surgeon who meets her, she seems like such a common young man (don't you, aren't doctors getting younger all the time?). He guides her into a room with a central console and television monitors that occupy two large walls. "These record our out-of-office patients," Dr. Torn explains. On one screen she sees her son, doing confidentiality, a nurse, in a small room—he looks like he is in one of those virtual camping programs on interactive TV—while two technicians busily quietly about setting up a framework of equipment. Another screen scrolls through her son's vital signs. Every so often computer prompts appear: "White count stable. Do you wish RNA read?"

Picking a patch, the doctor also shows her fluorescent images of her son's damaged heart and of the spinal column with a fissure like a spider's web on one of the joints. The emergency metal bed Poni is lying on contains a built-in imaging





## Genetic databases will be used to fight society's most feared diseases, including cancer

the function each gene has in the body. Estimates of how long that will take range from a few decades to half a century.

So far, Canada has been mostly on the Genome Project's sidelines, with centers in the United States, Britain, Germany and Japan doing the decoding. But Canadian researchers, with an impressive record in tracking down genes that cause disease, stand to play a bigger role in the next phase. In Vancouver, a Genome Sequence Centre at the British Columbia Cancer Agency is at work on a project that involves identifying key areas of the mouse genome for sequencing. Because mice and humans have many genetic similarities, the process will provide a way of spotting gene locations in both species. After that, officials say, the center will turn to other projects, including a study aimed at pinpointing genes responsible for patients' differing responses to chemotherapy drugs.

Matching drugs to individuals will probably be one of the earliest benefits of the Genome Project. Besides providing researchers with genetic targets for drug research, the new genomic knowledge will shed light on the subtle genetic variations that can determine why drugs affect some people, do nothing for others—and in some cases make patients feel worse. Already, researchers are using what they call gene chips—tiny wafers carrying 6,000 gene sequences—to search for variations that can decrease differences among individuals, including hair colour, height and drug response.

Within a few decades, genetic screening—and genetic drug-matching—may be routine. Vancouver geneticist Michael Hayden envisions a checklist for a 30-year-old man in 2020. After technicians have screened him for 15 or so genetically influenced diseases, the man's computer readout shows a high probability of colon cancer and heart disease. Next, says Hayden, health-care workers run a test to pinpoint drugs that can reduce the risks with the minimum of side-effects. "We will be treating people before they are ill," says Hayden. "And we'll be able to choose medications to match a patient's medical profile."

At the same time, researchers will be using genetic databases to take aim at society's most feared diseases, with cancer high on the list. Doctors already know that cancer results from a series of genetic changes that include inherited flaws in an individual's DNA, compounded by "hits" from environmental factors. Those include diet, cigarette smoking, carcinogenic toxins or radiation, as well as underlying susceptibilities that are at least genetic in origin. As the last two types of cells break free of genetic regulation and begin the uncontrolled proliferation that produces deadly tumours.

Researchers have already identified about 100 genes that figure in cancer—and they expect to find hundreds, or even



Even at Vancouver's Terry Fox Laboratory, the challenge is enormous—it could take as much as half a century to determine the function of the tens of thousands of human genes

thousands, more. With that knowledge, drugmakers will be able to expand enormously the use of a new drug-designing technique now in its infancy—formulating drugs to strike targets inside cells at the molecular level.

One approach to stopping cancer will likely involve vaccines designed to persuade patients' immune systems to attack and kill cancer cells. And one way to do that, says Jack Gaudin, a researcher at McMaster University in Hamilton, is to strip the disease-causing elements out of a common cold virus, replace them with human genes capable of provoking a powerful immune response, and deliver the new package to the disease site. So far, however, numerous attempts at similar kinds of gene therapy have been largely unsuccessful—and the technique suffered a jolting setback last month. Researchers in Philadelphia acknowledged that an attempt to inject new genes into an 18-year-old Arizona man with a rare liver disorder in September resulted in his death.

But Gaudin says that could not happen with the approach his team is using, which involves a lower dose of genetic material. He believes his work method—which is already being used in drug trials—has a better chance of success than previous attempts because the virus has been "tamed" to lock onto the precise cells that need to be activated.

Another promising line of attack in the war against cancer centers on drugs designed to thwart tumours' ability to develop the blood supply they need in order to grow. Dozens of firms are working on so-called anti-angiogenesis drugs, in-

cluding Quebec City-based Astra Laboratories Inc. The firm reported that in early-stage clinical trials, its drug significantly increased survival time for patients with one type of lung cancer.

In another approach, scientists are looking for ways to block the activity of telomerase, an enzyme that plays a role in most types of cancer by extending the normal lifespan of cells, enabling them to proliferate indefinitely. "We're looking for molecules to interfere with the action of telomerase and bring cancers to a halt," says Geneth's Fink. "We'll find what we need within 10 years—I hope."

Some diseases, including Alzheimer's and Parkinson's, which arise from an interplay of genetic and environmental factors, may take longer to conquer. Scientists studying Alzheimer's have already identified four of the genes involved. Gaining a complete understanding of Alzheimer's will probably take longer. The reason: researchers think potential victims inherit genes that make them susceptible to the disease, and others that make them vulnerable to environmental triggers. "Testing out someone to see whether so complex a dis-



Genome Sequencing Centre, Washington University, St. Louis, Mo. U.S. researchers are doing much of the decoding

will be difficult," says Dr. Peter St. George-Hyslop, a Toronto-based Alzheimer's researcher. "But I think we'll succeed, eventually."

Potentially just as hard to untangle is type-1 diabetes, the early-onset form that makes most patients dependent on insulin injections. Researchers believe at least 15 genes play a role in the disease. And in 100 diabetic families, says Leigh Field, a University of Calgary researcher, "there could be 100 different combinations of genes involved." She thinks genetic mutations in type-1 patterns can lead to an overly active immune system. When a viral infection strikes, the immune immune response triggers a reaction that damages the pancreas's insulin-producing beta cells. "Bearing type-1 dia-

betes," says Field, "is going to take time."

One possibility for preventing diabetes and some other diseases involving cell death may be by blocking apoptosis—the mysterious process in which the body responds to some forms of toxicity by killing off faulty members of cells. Two Ottawa researchers, Robert Korneluk and Alex MacKenzie, have identified three genes that can block apoptosis. Ironically, says Korneluk, it may be possible to use knowledge of how those genes work to formulate drugs capable of preventing cell death in diabetes, stroke and other conditions.

New discoveries may also enable people to recover from crippling spinal cord injuries. Only a generation ago, medical doctors said that damaged spinal nerves could not regenerate. But research over the past decade, says Dr. Michel Rathbone, a McMaster University neurologist, has shown that "it may be possible to get very significant recovery." In 1988, Rathbone discovered that substances called purines, which play a role in intercellular communications, can encourage damaged nerve cells to "sprout" new circuits. And last month, researchers in Montreal led by McGill University neuroscientist Samuel David reported development of a vaccine that can promote the regrowth of damaged nerve cells in mice.

In the next phase, predicts Rathbone, physicians will probably be able to repair damaged spines by using a variety of strategies. "When will this happen? Soon enough," says Rathbone, for Saporum star Christopher Reeve, now 47 and largely paralyzed by a 1995 riding accident, to walk again.

Whether that prediction—or the glowing hopes held out for the Genome Project, and other areas of medical research—will come true is hotly debated. While some skeptics insist that the decoded genome may increase scientists' understanding of disease without leading to cures, others foresee a future of limitless promise. "We can understand all human developmental processes," says Vancouver's Evans. "Then I think the possibilities are incredible." There are bound to be setbacks and surprises along the way. But it seems unlikely that with the enormous new wave of genetic knowledge in humanity's grasp, the course of medical progress that succeeded it will follow now. □

## FLAWS AND EFFECTS

Scientists know that genetic factors cause certain conditions—and some think that genetic susceptibility may play a role in virtually all human disease. The main genetically caused diseases known to date:

### Single gene disorders

- Cystic fibrosis
- Fragile X syndrome (common form of mental retardation)
- Huntington's disease
- Muscular dystrophy
- Sickle cell anemia
- Tay-Sachs disease (causes death through loss of brain cells)

### Diseases involving genetic and environmental factors (such as diet, smoking, viruses)

- Alzheimer's disease
- Breast cancer
- Colorectal cancer
- Coronary artery disease
- Diabetes
- Hypertension
- Lung cancer
- Ovarian cancer
- Pancreatic cancer
- Parkinson's disease
- Prostate cancer

# Repairs with Spare Parts

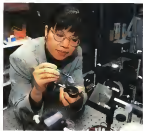
Replacement organs and tissues will come from animals and cultured human cells

Inside a company building on the University of Guelph campus, 60 km west of Toronto, about 20 closely watched white pigs live in steel isolation. "These pigs," says Danny Butler, a professor of veterinary medicine, "cannot be allowed to enter the food chain, or have any contact with other pigs." The reason: they carry a human gene, one that could enable doctors to transplant pig hearts and other organs into humans without eliciting massive rejection. Developed by British-based Inverna Ltd., a subsidiary of biotechnology giant Novartis, the animals are part of a wave of research that promises to make animal parts, as well as laboratory-produced skin, blood vessels and organs, routinely available for human use within a few decades.

With half a dozen U.S. and British firms in the field, the first attempt to transplant a pig's organ—probably a kidney—into a human could occur within a year or so. But first, scientists—including experts working for Inverna in London, Oron, and Toronto—will have to show that animal transplants are not going to expose humans to new diseases. "Regulators will have to be satisfied," says Butler, "that there is no risk of infection by animal viruses or bacteria."

Researchers working in the new field of bioregenerative are pursuing a different approach to developing spare parts for humans. Their goal is to create a supply of human tissues for burns, injury and disease victims, as well as organs for transplantation to deal with the chronic shortage. Last month, researchers at the University of Ottawa's Eye Institute unveiled a bioregenerated replacement for the human cornea—the eye's transparent, external covering—that could be ready for use within a decade. Led by cell biologist May Griffith, the Ottawa team fashioned the cornea by growing human cells in a culture, then layering them over a biodegradable scaffold. Before the device can be tested in humans, says Griffith, "we have to make it stronger—it's too fragile right now."

Using similar techniques, University of Toronto researchers are trying to develop skin and bone substitutes—and plan-



Griffith with prototype corneal layering human cells over biodegradable scaffolding

ning how to construct entire organs. Bone substitutes made from titanium alloys, coral and other materials are already used in dentistry and to repair damaged hips and knees. But they all have drawbacks, says UofT bioengineer John Davies. He has developed an approach in which a biodegradable foam provides a nucleus for natural bone regeneration—supplemented by bone marrow cells that have the capacity to form new bone. Human trials could begin within a year.

Michael Sefton, another UofT researcher, is behind a more audacious plan—for a bioregenerated human heart. According to Sefton, about 60 scientists support the proposed \$5-billion, 10-year project dubbed the Life Initiative. They are currently trying to win U.S. and Canadian government backing. The researchers would first try to develop a bioregenerated heart valve by sending muscle cells onto a vase-shaped scaffold, then move on to develop other parts before assembling a complete heart. "Even if we don't succeed in producing a heart within 10 years, we'll have a lot of valuable research and new information about bioengineering," says Sefton. "That's our fallback position." A mechanical device, meanwhile, is already in an advanced stage of development. Officials at Ottawa-based WorldHeart Corp. say human tests of an implantable machine to pump blood for patients with seriously weakened heart muscles could begin by mid-year.

Mark Nickles

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# Robotic Surgery and Biosensors

Breathtaking developments in medical technology are about to change the face of diagnostics and treatment

By Robert Sheppard

**It is nothing at all like television ER.** The operating theatre is dimmed, so much so that you can barely see the faces of the surgeon. They sit like ghosts amid the red-blue glare of the television monitors scattered strategically about the room. The patient—anaesthetized, her body pinned to a table by gun-shaped aluminum arms—is draped upstage. The two focal points are the illuminated pad by the surgeon's hands, like the control panel of a fighter jet, and the overhead monitor that shows the brightly magnified innards of a teenage girl with a stomach disorder.

Dr. Mehmet Arslan likes to operate in the dark. For the Helsinki-based surgeon, a pioneer in the field of minimally invasive techniques, surgery is no longer about feeling your way among the ravines of diseased tissue. In this theatre, it has become a rich spectacle of colour and magnified imagery on a screen, better viewed with the lights down low. The subdued lighting also sets the zone for what is more a mind game than a tactile exercise—speering and manipulating at a distance from the patient's side, a distance that, technically, at least, knows no bounds. That is because of the help of such New Age assistants as Aesop, Hermes and Zeus, computerized technicians and robotic arms that snake into the body's cavities through openings barely larger around than a fountain pen.

Minimally invasive or "keyhole" surgery, in which surgeons cut, stitch and extract by manipulating controllable tools through tiny holes in the skin, has been around since 1987 when French gynaecologists trained the medical world with their techniques. But it is recent years, the addition of high-powered miniature cameras and computer-controlled robotic arms—not to mention patients demanding these less invasive operations—has truly enlarged the repertoire. At least 65 distinct procedures are now being performed this way in Canada, some as routine as gall bladder removal, after which patients are released the same day. The less routine include delicate robotic surgery on the spine, small vessels

*Operation under way at London's University Hospital: one of the three robotic arms would a fork-like prong that holds the liver surface steady while another uses a new artery*

in the brain and, occasionally, on fetuses still in the womb. The impressive technology lives up to its mythical names. Aesop is a \$120,000 voice-activated arm that guides the minuscule fibre-optic camera and lights the path for the others to follow. Hermes, a computer system that controls the surgeon's total operating environment and includes the stomach and other cavities for ease of access, can run as high as \$375,000.

And Zeus pretty well does it all. The \$1.1-million, three-armed robot was designed by NASA for use on long-range space missions—with the surgeon back on Mother Earth. Zeus can perform key elements of an operation when directed by a doctor's commands at the key pad. "Zeus aims," says one enthusiast, and indeed it does. It strikes where it's told to, even on a (momentarily halted) beating heart. In some models, one particularly advanced blade becomes slightly flexible when exposed to the heat of the body, allowing it to conform to the shape of certain organs or tumours. Zeus's next step, its software designs are promising, will be the ability to move in harmony with a pulsating heart or a blood vessel in the brain—while showing on a screen an image of a still site. "We're still in our infancy here," says Arslan. "But intuitively, I think we all realize this is the way of the future."

Here is the future on a table. In September, doctors Douglas Boyd and Alan Metcalfe, at the new centre for robot-

assisted cardiac surgery at University Hospital in London, Ont., performed the world's first robotic-assisted coronary bypass through tiny incisions between the ribs. Since then they have done the procedure on 20 patients. One of Zeus's three "arms" would a fork-like prong that automatically holds the heart surface steady while another sews in the new artery. Still highly experimental, and still limited to relatively simple cases, these operations can take as long as conventional surgery. But they require fewer technical staff in the operating room. And because there is no need to crack the chest open for the operation, hospital recovery time is about half that for conventional methods, a boon for patients and to hospital administrators trying to save money.

**Robotic surgery** is currently the glitziest high end of cutting-edge medicine. But it is only one new frontier in the rapidly evolving world of medical technology. The same inventive forces that are powering the Internet and big-screen computer animation are revolutionizing medical science. Zeus may be the king of the operating table for the moment. But on the horizon is the so-called nanotech revolution—tiny computer-chip-operated machines ("nanos") as small as a molecule that, theoretically at least, will scour arteries for plaque or be sent on a mission—as a smart bomb, for instance, programmed to destroy a tumour with a targeted dose of

chemotherapy or some other agent. A pipe dream? A study by the artificial Rand Corp. in the United States says nanotechnology may be commercially available within five to 15 years.

Closer to fruition are hard-held biosensors for analysing body chemistry from breath or a drop of blood—or, as one futurist suggests, from a comb passed through the hair. Within a decade, sensors could wake most mature lab work obsolete and vastly exceed both the quality and quantity of diagnosis. An Australian team claims it has developed a chemical sensor so sensitive it can measure the sugar increase from one cube being dropped into Sydney harbour. In a very few years, scientists predict, implanted sensors will automatically trigger artificial insulin pumps in diabetics; send immediate biological readings to a "master" generator of cardiac pacemakers; and release a disturbance-preventing drug implanted in water form in people with irritable bowel syndrome. Scientists at Johns Hopkins University in Baltimore, Md., have already developed a bioship processor that can be implanted in the eye as an artificial retina to help maintain eyesight in those with certain debilitating conditions.

Also moving quickly to the foreground is next-high-powered magnetic and ultra-sound imaging software, like that unveiled at Toronto's Sunnybrook and Western College Health Sciences Centre in November. It allows physicians to



Surgeons will  
examine tumours  
and other soft tissue  
growth without  
opening the body



"see" the flow of blood through the smallest of heart vessels without having to insert dyes or radioactive probes into the bloodstream. Victoria's Royal Jubilee Hospital is testing a similar laser-scanning device that can produce rotating, three-dimensional images in brilliant colour. Other software being developed will allow surgeons to examine tumours and other soft tissue growth without opening the body. "The convergence of technologies—the computer chip and genetic coding—it brings about the greatest advances in medicine in 50 years," says Dr. Cal Siller, head of a London, Ontario-based virtual capital group, the Canadian Medical Discovery Fund. "With some of the new imaging techniques we can actually see inside the cell, see which drugs are working and which are not—immediately—without invading the body and without waiting for days or even months to find out."

But it is not just the high-tech gadgetry that is transforming the delivery and nature of health care. That old standby, television, is moving its way into the network operating and examination rooms through two-way video-conferencing. When coupled with electronic sensors and digital equipment that can transfer ultrasound images—and now even tissue analyses—across the wires, telecommunications technology is leading the push towards a common electronic library where every patient's complete medical history can be automatically accessed by a bona fide health provider.

Video-conferencing has already allowed Canadian surgeons to "participate" in complex operations as far away as Japan—and vice versa. From McMaster University, Toronto's plan to planning to "telemanipulate" Beijing keyhole surgeons in Yellowknife and other Canadian areas as early as this spring, McMaster's interactions will not be directly in the driver's seat during these lessons—some provincial laws restrict the provision of medical services across a border, and, for the moment at least, no one envisions distance surgery other than a teaching tool or in a dire emergency. But from 2,000 km away they will have their feet on the electronic chair—with the power to stop or change a procedure if it looks to be going awry.

Almost every province and territory already offers some form of telemedicine to remote regions. In the North, an

*Dr. John Morris of Yellowknife's Severn hospital looks up with a clinic in Toronto saving money on travel costs*

18-month-old telehealth program brings a regularly scheduled electronic clinic from Yellowknife to the smaller communities of Inuvik and Fort Smith every two weeks, with plans to extend it across the Arctic. Patients and doctors face each other through 18-inch computer screens; ultrasound, X-rays and closeups of potentially cancerous moles or other skin conditions are transferred instantly. "It has saved us a lot of money on travel costs," says Dennis Korol, the telehealth coordinator at the Fort Smith site. "Eventually we hope to use it also as a recruitment tool. We desperately need a way to keep people in small nursing stations in close professional contact with their colleagues."

Distance medicine is the precursor, some say, to delivering electronic diagnosis right to the home or workplace. It may even be the advance guard for the virtual hospital. Toronto's Hospital for Sick Children is well on the way towards the creation of a "virtual pediatric hospital" by electronically hooking up its experts with 11 other sites in Ontario, Quebec's four

pediatric hospitals have done the same for the rest of that province. Parents with chronic heart and lung problems—and kidney patients who are strong enough to do home dialysis—are being diagnosed with relatively inexpensive (about \$5,000 each) hospital-provided home-monitoring devices in several large centres. "This is the way of the future," says Dr. Robert Baker, former chief of surgery and now the director of telehealth at the Hospital for Sick Children. "Physicians might actually see a lot more people—but not necessarily in person."

Home-monitoring, interactive video consultations, remote surgery with specialists advising or operating the controls from a distance—these are part of the same phenomenon that has filled the Web with an estimated 100,000 health sites, some of them containing the same diagnostic tools that doctors use. A case in point: Joe Siskowski, a 48-year-old former pilot from Red Lake, Ont., about 90 km from the Manitoba border. Until February, when his Winnipeg cardiologist told him he had a blocked coronary artery, Siskowski had been flying the scout plane on former fire details. "That grounded me," he says, "but I wasn't going to do anything because I felt fine and I didn't want to lose my chest cracked open." Then a friend sponsored an article about minimally invasive surgery, and Siskowski's wife, Beth, started to do some research on the Internet. That was in August. The couple stumbled upon Dr. Douglas Boyd's name at University Hospital in London, sent him an e-mail and heard back 14 minutes later. "Fourteen minutes! My wife still can't get over that," Siskowski says. Within three months he was on the table, under Zeax—and then released from hospital in less than a week, flying on top of the world. "I had been thinking if the chance came for robotic surgery I would take it," Siskowski says. "But I expected it would be a couple of years down the road."

Accompanying the medical evolution are some difficult issues for society to grapple with: cloning tissue and organs for replacement; genetic privacy to protect employers from refusing jobs to individuals with a predisposition for serious disease; an overabundance of health options; and cost. Proponents of minimally invasive surgery argue that the length of hospital stay is much reduced, a huge saving in itself, and a significant quality-of-life benefit to patients. But costs can be daunting. Long-distance telemedicine represents a noticeable added cost for patients and their families, but it is often an added cost for providers that the health system does not cover directly.

Similarly, robotics have the potential to extend the relatively contemporary age of surgery to the elderly and frail who now manage their illnesses largely through medication. In Hamilton, Ontario's specialty—wrapping the top of the stomach around the esophagus to prevent painful acid reflux—was only done in extreme cases in the past, when it required a considerably larger cut. Now it is much more common.

But even at a cost, change is coming. And change in the nature of surgery is changing the nature of hospitals. At London's University Hospital, a substantial \$6.8-million donation by the city's philanthropic Ivey family is pulling cardiologists, imaging specialists and robotic-surgeon to-

## CHANGE AND CHALLENGE

**As Canada and other developed nations usher in a new wave of healing and disease prevention, parts of the world face a different reality. In the developing regions," says the World Health Organization's *World Health Report 1998*, "noncommunicable diseases such as depression and heart disease are far replacing the traditional enemies, in particular infectious diseases and malnutrition, as the leading causes of disability and premature death." Injuries, from war, traffic accidents and other interpersonal or environmental causes, adds the Route-based global body, "are also growing in importance and by 2020 could rival infectious diseases worldwide as a source of ill health."**

gathering under one roof in what promises to be the country's second largest cardiac care centre after the one at Toronto Hospital. The four western provinces are considering joining forces to establish a health network and state-of-the-art "centres of excellence" in certain areas for cancer care, heart treatment and some pediatric surgery.

What does the future hold? In a draft report now being circulated among key decision-makers, The Change Foundation, a health-oriented think tank created by the Ontario Hospital Association, envisions a health-care system that would include, as well as a few full-service, walk-in-to-door hospitals, a mix of more specialized centres that could sell their services—their cancer techniques or robotic training skills, for example—anywhere in the world. Rethinking the system, consumer-oriented health deals with a range of insured, alternative and private offerings.

**A much more** inter-connected health system? Yes. But also one that will respect the demands of confidentiality. "I think the future is going to be more private," says The Change Foundation president Gabe Macey. "People will say, 'I'm a health information not society.' Whatever the case, emerging consumer attitudes towards health—growing doubts about existing institutions, demand for the best possible service and a willingness to try alternative approaches—may well fuel the medicine of tomorrow as much as the advances in genetics and computer technology.

Surgeons, the traditional crown princes of the medical establishment, the holders with hands of life, may find themselves sharing the glory with the computer crowd at some point. "And it's going to hurt," says Siller. "This was our business card, their identity." Boyd, the robotic heart surgeon, is more sanguine. Surgical robots are great equalizers and great instructors, he says. "They can enhance a surgeon's ability," he adds, "but they can't enhance a surgeon's judgment or creativity." Zeax, the mythological long of the heavens, may see like an angel, but his day, too, will pass. In the meantime, he takes his orders from mere mortals. ■

## Looking inside the heart



*A heart mapping system to be tried out at Victoria's Royal Jubilee centre over hospital this year will use tiny sensors as a catheter (right) to produce images (left) that show the state of the muscles of the left ventricle.*

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## Education

# The bitter reality of reform

Massive changes to the  
school system are still  
dividing Newfoundland



Power and daughter Lyndsay outside  
Beaconsfield High, desperate measures

Necessarily the students at Beaconsfield High School—like teenagers anywhere—would welcome a day off. But Dec. 13 was a long way from normal. Instead of heading to class, they blocked the entrance to the St. John's, Nfld., school and turned the teachers away. Later that day, close to 200 students turned up at the Newfoundland house of assembly, where they watched Education Minister Judy Foote accept their petition to keep Beaconsfield open and ensure a kindergarten to Grade 12 school system in the city's west end. Then they were home, where they stayed until the last day before Christmas break. On their return, they handed the school board and provincial government an ultimatum: save Beaconsfield or the students will be the backs up again after January exams. "We're tired being reasonable," says Kayn Murphy, 17, who is in Grade 12 and is co-president of Beaconsfield's student council. "But the students are being forgotten in all of this. We just felt we had to do something desperate."

The Newfoundland government knew it was in for a long, tough haul when, realizing the need for a complete overhaul of the province's centuries-old deconcentrated, non-uniform education system, it appointed a royal commission in 1992. Eight years, two referendums and a noisy court battle later, the religious war between the churches that run the schools and the successive governments of Clyde Wells and Brian Tobin has gradually died down. But the provincial government's sweeping attempts to rationalize the school system remain a lightning rod for

public discontent. "The government," says Mark Graessle, a political science professor at Memorial University of Newfoundland who is writing a book on the province's education reforms, "has tried to push all its reforms through with such speed that it has incited enormous change at the family level."

What kind of change? Church control over the education system—a power actually enshrined in the Terms of Union when Newfoundland joined Confederation in 1949—meant that even the smallest outpost likely boasted multiple schools run by different religious denominations. Moreover, overall enrolment was steadily falling due to the exodus from the once economically depressed island and the province's low birth rate. Today, only

93,500 Newfoundlanders attend school, compared with 163,000 in 1972. By 2015, the government estimates, the student body could be as low as 43,000. That inevitable fact was not lost on Newfoundlanders in the 1997 referendum on school reform: 73 per cent of them voted in favour of the Tobin government's plan to create a single, non-denominational system.

But some of those supporters may have been surprised by the reality of educational reform. Since the overhaul began in 1997, 157 of the province's 500 schools have closed in the name of efficiency. Finding the right class for every student has upset the system. Some parents have been apoplectic that their children are being forced to leave their old schools for interdenominational, sometimes a community away. In places, the parents have fought back, disrupting school board meetings and even keeping their kids out of class in protest. So far, 12 parents groups across the province have taken school boards to court over closures. "There are bound to be people upset with change," argues Foote. "But most Newfoundlanders remain satisfied with what we are doing."

The lockdowns are certainly making a lot of noise. Just last month, parents angry with the latest round of closures demonstrated before officials of the Avalon East school board to shut down a public meeting in Bay Roberts, 40 km west of St. John's. Late last month, a nine-person group calling itself the St. John's West Parent Action Committee was busy trying to raise money to mount a court challenge to the decision to close Beaconsfield High next year and ship its students to other high schools in the city's centre. "We're talking about our children here," says George Power, co-chairman of the group and a former whose 15-year-old daughter, Lyndsay, attends the school. "Nothing is going to make us quit." Not exactly what Newfoundland's beleaguered government wants to hear.

John DeMont at St. John's

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Canada

# 'Superman, U.S.A.'

Dana Reeve shares the letters that inspired her husband after his accident

Dana Reeve is a confirmed optimist—but even she needed some help staying positive after her husband, actor Christopher Reeve, was thrown from a horse and fractured a vertebra in his neck in 1995. A vertebrae-dependent quadriplegic, Christopher was on life support and became so depressed he considered shutting off the system. It was in those early dark days that inspiration and support, via sets of thousands of letters—some addressed only to "Superman, U.S.A.," a reference to the 1978 movie role that made him a star—began pouring in from around the world. Dana's recently published book, *Gave Thanks*, is a compilation of 200 of her most cherished letters. "They really helped us get through the day," she says, "and I felt they needed to be shared."

The correspondence came from strangers, fans and celebrities alike, and included advice, personal stories, flowers and gifts. Among the letters included in the book are two from U.S. President Bill Clinton and a member from A-list Hollywood stars, such as Katharine Hepburn, whose note closes with the sentence: "My golly what a man." Canadian entries are also featured: one from a fellow actor in Rocky Mountain House, Alta., and another from the parents of a quadriplegic in North Bayfield, Sask. The letter Dana most treasured not being able to share was a medical dispatch



Reeve: she always 'really helped us get through the day'

from the late Diana, Princess of Wales, who dined with Christopher at the *Superman* premiere in London.

But dealing with loss is something Dana and Christopher Reeve and their seven-year-old son, Will, have become well acquainted with. Dana says Christopher wishes daily that the accident hadn't happened. "Then," she says slowly, "you get past the intensity of the emotion and get on with life."



Charles Gordon

# Who cares if they go?

In case you had hopes to the contrary, it is necessary to inform you that the old realities are going to carry over into the new millennium. All those things you heard about the 1990s—classics, Postmodernism, Pachelbel's Canon, SUVs, the Jumbo Train—say still with us, and will be for some time. So will the so-called new realities, always unpleasant ones, that we were so often urged to accept, like acid rain, lack at the end of the last century.

It is the new realities, usually capitalized as New Realities, from which we have the most to fear. One of them, Living Within Our Means, won't much far, back in the '90s. Neither was Globalization, which has survived in to the new century. We have learned more than we wanted to know about Globalization already, and there is a terrible suspicion that we are going to learn even more.

Among other New Realities not to look forward to are those concerning professional sports teams in Canada. Some time in this century, perhaps even in the first year of it, we are going to lose a professional hockey team. It could be the Ottawa Senators, whose owner doesn't like the tax climate. Or it could be the Vancouver Canucks, whose owners have announced, after seeing how it was going in Ottawa, that they think going much the same way. Or it could be the Edmonton Oilers, who have seemed shaky for some time in people who know about skeletons. Even the Montreal Canadiens franchise, the closest thing professional sports has to a church, has been told to be in trouble.

Then there are baseball's Montreal Expos, who have fallen on hard times (not to mention their owner) and whose owners have a small window of opportunity to improve the team and construct a new stadium that will bring fans to see it. Oh, and did we mention the Vancouver Grizzlies, a National Basketball Association team that has done OK at the box office, but has had the misfortune to be purchased by Amway—and you know where teams purchased by Amway sometimes go.

The New Realities have been cited in most incidences. The cities in which these teams play have been declared "small markets." That doesn't only mean that they can't fill some seats or stadiums, although it can sometimes mean that. It means that they play in such lacking sports-madland ballrooms to own them. Most crucially, it means that they play in areas with not enough viewers to satisfy the TV networks that throw the big dollars at professional sports teams. When the big dollars are not thrown, the big salaries—which are now almost as big as the New Reality—cannot be

paid. When the big salaries cannot be paid, the big players leave, the small-market teams lose too many games, the fan and network interest drops off and they ride the New Reality Express on some well-populated and rather wealthy area on the other side of the border.

If this is New Reality, there's not much we can do about it. A tax cut or two may forestall the inevitable for a year or two. But if the big-crusher dollar is really calling the shots, we will be without big-time sports in small-market Canadian cities before the new century has gone on for long.

What are our choices after that?

- (1) We can all cheer for Toronto.
- (2) We can take our pick of teams in Virginia, Portland or several points in Florida, all owned by TV networks or multinational conglomerates that also own TV networks.
- (3) We can find something else to do.

Many people, planners of sorts, adopted the third option long ago. They watch baseball, play the fiddle, read, walk or some such thing. They have no idea what's winning. The question is whether the rest of us can follow suit.

Technology provides new options, which are as yet unexplored. Will the Internet really change our lives, occupy our minds and spare time and make up for the loss of spectator sports? Or, in terms of our daily lives, will it just be the more cable channels, amazing enough for a few years up and down the dial, but not so exciting after that? And does the lure of new and fascinating, even a useful interaction with home computers run head on into a moral pitfall, the need to go out and do something?

That particular need has been fighting a battle, sometimes winning, sometimes losing, against another primal need, the need to root for the home team, follow in games on television or radio, and in the sports page. Will we give that up, rather than substitute by adopting one multinational conglomerate instead of another as our "home team," and if we do, will our lives be better?

There's always that choice. We could support the arm, which we always grateful when we do. We could go to the symphony (it gets a better tax climate) or to the gallery. We could write a symphony. A lot of energy goes into rooting for the home team. Freed up, it could accomplish powerful things.

We could walk in the woods or learn to paint, read a book or write one, imagine something great or build it.

It's a daunting prospect. Life without the home team. There will be terror at first, followed by withdrawal. And then what? Somehow, with each passing day, each new owner's threat, the prospect becomes less frightening, more inviting.

# Hounding the Hells Angels

Yves Lavigne has been investigating the notorious Hells Angels bike gang for 15 years and three books now, and he's rather sick of it. *Hells Angels or War* is "definitely my last Angels book," says the wary, intense writer. "Even if that's what I said after the first one." Right now, Lavigne would rather put the finishing touches to his long-delayed home renovation, a former bakery in Toronto's industrial end that appears as forbidding and secure as any gang's clubhouse. Inside, jumbled construction materials and plumbing supplies—after two years of



Lavigne: 'I want to change the world as it is'

living there he still doesn't have a functioning bathroom—pots with more than 100 cans and sachets.

But Lavigne admits he may find it difficult to keep away from his inves-

igative work for long. The 46-year-old former crime reporter still receives a steady stream of tips from an extensive network of sources, both police and criminal. And he is propelled by a strong sense of justice—"I want to change the world as it is"—and a willingness to fight. Both are the legacy, Lavigne says, of his father, a professional boxer and a backup goalie for the Montreal Canadiens in the 1940s, who was diagnosed with Alzheimer's disease in November. He shrugs off questions about

his physical safety. "That is an ongoing concern," Lavigne says matter-of-factly, "but I don't let it turn to fear. If the Angels really wanted me dead, I'd be dead by now—they have the means."

Charles Gordon is a columnist with *The Ottawa Citizen*.



Theatre

# Yoko's Daughters

Pivoting on Yoko Ono, a show focuses on Asian female creators in North America

By Susan Oh

There was a time when Joan Yoon cringed at the mere mention of Yoko Ono. In the mid-1980s, Yoon, then a twenty-something aspiring writer of Korean descent who favoured long hair and sunglasses, couldn't walk down the aisles of Toronto without strangers calling her Yoko. Occasionally, it seemed a misguided compliment; not everyone despised the much-maligned avant-garde artist from Japan who had married Beatle John Lennon, but more often it was a slur, called out from speeding cars or by drunks in clubs. At the time, there was a renaissance of Ono-mania, triggered by Lennon's assassination and a slew of vicious books portraying her as a drug-addled, "I felt the heart and racism directed at her, and so I hated her, too," recalls Yoon, now 37, who pronounced her sunglasses and stopped wearing her

hair down in response to the Yoko comment. At one point, asked by a Bafft Centre for the Arts instructor's suggestion that she "write more of that Korean stuff," Yoon shot off a 10-page rant detailing the racist incidents she had endured, beginning with, "If one more person calls me Yoko I—g—Ono, I'm going to slug them."

But slowly, over the course of 13 years, Yoon's resentment evolved into a sense of identification with Ono. "She was the first Asian woman with a profile who could be viewed as threatening in the Western mainstream," says Yoon. "People didn't know how to take her, and I realized, they didn't know how to take me." That realization is the basis of the collaborative show *The Yoko Ono Project*, which opens at Toronto's Theatre Passe Muraille on Jan. 13 and runs until Feb. 6.

The cast is a roll call of accomplished, mostly Asian, performers, including Doree-recentured

playwright-actor M.J. Kang and jazz-influenced musician Lee Pui Ming, who composed and performed an original score. Yoon co-directs with theatre writer Marian de Vries. Staged on a comparatively large budget of \$100,000—provided by a handful of organizations, including the Canada Council, the Toronto Arts Council and the Lucille Foundation—it is arguably the most ambitious production mounted here and by the Asian-Canadian theatre.

The show is being toured by leading Asian-Canadian artists as the latest proof that their community—dense as it is in countries of origin as well as length of histories in Canada—is maturing. In recent years, there has been a surge of creators, from writers Weynon Chay (*Paper Shashoua*) and Keith Sakamoto (*The Electrical Field*) to actress Sandra Oh (*Last Night*) and MacMusic personality Sooke-Yin Lee. Toronto actor Chay, 60, who says he was the first Asian-Canadian to embark on creative writing studies at the University of British Columbia (in 1959), and perhaps in all of Canada, notes that in his generation, Asian artists believed they had no place in mainstream culture. "It was unheard-of for Asians to go into the arts—in Chinese immigrant cultures, there

was the exploration of issues including interracial couples, racism, art and the fear of being conspicuous.

Despite the heavy undercurrent and some emotional scenes, Yoon's script manages to stay playful and subtle, much like Ono's art work and poetry, which is liberally played into the show. After five years of dogged effort, Yoon received permission from Ono's studio to use archival documentary footage of her, as well as her creative output. In 1994, Yoon first contacted Ono's studio residence at The Dakota in New York City, getting the address by finding a frame in a film about Ono in which assistants are opening fire mail. The playwright also managed to get a phone number for Ono, and then proceeded to call the artist's staff, sometimes making useful entries. Although Yoon briefly met her subject backstage at Ono's March, 1996, Toronto concert, the staff had not obtained permission to use Ono's work two years after she had passed. Finally, last March, an Ono associate called to say that Yoon could use the artist's material for what she describes as a "honorary" fee.

Yoon learned to be cautious as an artist growing up in a culture that considers acting—Yoon's first career, and one she still pursues alongside writing—a rung above being a cartoonist. The eldest of three children of a chemist mother and physicist father, Yoon fell in love with the stage while growing up in suburban Toronto, first admiring her parents when she appeared in a florid in a high-school production of *Cabaret*. Yoon recalls that the show prompted her mom to comment, "You looked too much like what you were supposed to be," and then to ignore her daughter for a week.

After getting a BA in English and comparative literature at the University of Toronto—where she also interested in writing—she encountered another barrier to her acting ambitions in the limited stage roles for Asian women during the 1980s. After doing of playing, in her words, "whites, Asians and superhuman beings," Yoon took more than a year off to teach English in China, before returning to Toronto to work for Theatre Ontario as co-ordinator of culturally diverse theatre, and later as co-artistic director for Toronto's Cabbages Theatre Project. In 1995, she created Loud Mouth Asian Babes, a theatre company for the "Dis/Oriented and Culturally Confused," as the company's mandate says. LMAA, which by then included actor Valerie Sing (Tarnas), mounted an Toronto Fringe Festival show and the workshop of *The Yoko Ono Project* before co-producing the current spectacle with Theatre Passe Muraille.

During the first rehearsal last month, there was much laughter as the cast read such witty Ono poems as her 1966 piece "Truth/Fake," which asks whether Mousie Fay is a carefully planned project built to attract tourism, or if truth and bones are solid forces of cloud. Several core members, as well as Theatre Passe Muraille artistic director Layne Coleman, had been rolling down their cheeks during segments dealing with prejudice or how race impacts on relationships.

One of the most surprising scenes is rendered by choreographer Doree Fujiwara, who plays the part Helen Yoko. After being tortured and called a "dick" at school, the young Helen gives her concentration a sound tongue-lashing. Fujiwara says that she herself was pelted with racial slurs at school, but adds that she "wasn't a verbal child. I'm so grateful to Joan for writing in the way it should have ended all those years ago."



Yoon, some from the play (*opposite*): a writer, subtle script, despite some wrangles, emotional subject matter

doesn't exist a respect for literature and the art of performing."

The younger generation of creators seems more confident. "There's a positive attitude towards Asian artists, and that we can make it in the arts," says Edmonton-based Mary Chay, 34, writer-broadcaster on the local CBC Radio feature *Don't Stop*. David said author of the novel-writing play *Mon. Don't. In Living with a Winner Girl*, currently touring nationally. "Whereas before you were a closet artist—artists were hiding it from their parents or hiding it from themselves—now there are more Asian artists coming to the forefront."

The mat at the base of *The Yoko Ono Project* revolves around three markedly different Asian-Canadian women. Their experiences and thoughts are seen through the prism of Ono's life—including her relationship with Lennon—and work. The women unexpectedly find themselves as part of a Yoko Ono performance piece and become vehicles for

# New beginning or eve of destruction?

An ecologist sounds a millennial alarm

David Suzuki is coaling over the most demonstrations that greeted the World Trade Organization's meetings in Seattle last year. "I was there for three days," the Vancouver-based geneticist says of the protests mounted by grassroots groups of farmers, unions, environmentalists and human-rights activists. "It was exciting to see diverse people realize the interconnections between unsustainable institutions and environmental degradation." For the 63-year-old ecological crusader, it was the best thing to happen in a decade, a show of resistance that dovetailed nicely with his newest book, *From Nobel Prize to Superpower* (Scribner, \$29.95).

A kind of reflective snapshot of the state of the natural world, the work discusses many of the same issues—most notably globalization and genetically altered foods—that brought 41 thousands of Canadians from Vancouver and thousands of other protesters to the WTO summit. But for Suzuki a more crucial linkage lies in the optimism and energy he saw engendered there among activists as they gained widespread media coverage, thanks in part to demonstrators' clashes with police. Much of his new book walks a fine line between sounding environmental alarm and wending driving agendas into apathetic despair. The events at the WTO meeting were a vital shot in the arm for those environmentalists who felt their movement had been too long on the defensive. "I believe," Suzuki concludes, "that Seattle has the possibility of becoming a defining moment for us."

*From Nobel Prize to Superpower*, co-authored with TV and film writer Holly



Suzuki's unspooled globalization means outside

Dressed, grew out of Suzuki and Desautel's popular eight-hour radio series of the same name. (Originally broadcast last April, the series will be repeated on CBC Radio One beginning on Jan. 14.) Its litany of environmental horrors is unspooling, but its main thrust is how contemporary global culture and short-term thinking keep humanity on a path the authors think is plainly suicidal. At the root of the problem, they argue, lies the modern belief—the poisoned gift of free creation of western science—that people are somehow outside nature, not subject to the constraints that bind all other life. It is a concept that keeps humans fixated on technological innovation, "pursuing endless growth in a world perceived as an infinite source of wealth."

But the earth's riches are far from inexhaustible, the authors contend. And those exploiting its resources seem un-

able to grasp the immense span of time—four billion years—it took for the planet's complex biodiversity to evolve. *Superpower* maintains that the current transformation of the world—depleting ocean resources, poisoning the land, altering the atmosphere and driving 25,000 other species to extinction every year—is occurring in a blink of geological time, with results that can hardly be gauged at.

So while there are any number of villains in the story Suzuki and Desautel, including the usual suspects—rapacious corporations and governments that lack the means or will to police them—the real enemy, apparently, is all of us. Humans, the authors maintain, have been driven into a frenzy of consumption which is destroying the natural world. And the media have to shoulder much of the blame. "People think the media is interested in showing what's happening, when in truth it's only interested in ratings and profits," Suzuki declares. Rather than provide in-depth information on serious but complicated issues, TV and newspaper increasingly offer superficial environmentalism. "To get attention in the media you've got to be sensational, violent or sexy. I'm predicting that in five years someone will be stuffed on tape, it's getting that bad."

Ironically, the media-bubbling comes from a man who is, by any measure, a media star. This year, Suzuki marks a double anniversary—his 20th season as host of CBC-TV's *The Nature of Things* coincides with the show's own 40th birthday. But the broadcaster does not exclude himself from criticism. "Weh, we're part of the process, the fight for attention. On *The Nature of Things* 25 years ago, we used to have interviews where someone would speak for three or four minutes, but now we go no longer than 30 seconds."

Yet even with what Suzuki considers



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## Books

minimal media scrutiny and active governmental assistance to change, he finds reasons for hope. The endless growth agenda, says the author, who has two teenage children with his wife of 27 years, Tara Cullen, is more vulnerable than it appears in Achilles' heel, he continues, as people's increasing worry over their children as rates of juvenile asthma and other disorders skyrocket. That was a key factor in the worldwide reaction against GMOs—generally modified organisms—about which Suzuki comments with more than just passion. Coopertown scientist, he laughs, "has that as a pretense I can speak authoritatively about GMOs." Suzuki, who has been on the faculty of the University of British Columbia in Vancouver since 1963 and whose 28 books include *An Introduction to Genetic Analysis*—a widely used genetics textbook—marshals powerful arguments against GMOs.

He focuses on the reductionist science that assumes a gene that works a certain way in one organic whole will act in exactly the same manner in a different one. The assumption is false, Suzuki insists, pointing to various GMO experiments in which the host plant changed in unexpected ways after being modified. He also rails against the steady release into the food chain of new GMOs after mere months of testing when their long-term effects may not be felt for decades. "Science proceeds by proving prevailing ideas are wrong," Suzuki points out, "and with GMOs we'll get to prove that with our lives or our children's."

But Suzuki is duly cheered by the public revolution that has driven bio-engineered food from European supermarkets—for him an example of what mass action can accomplish. And he is "absolutely" certain the same thing will happen in Canada. "Well, perhaps I shouldn't say absolutely," he jokes, recalling other setbacks, "but it is a very winnable." Even that much, for someone who thinks humanity is on its own path to extinction, smells a big step in the right direction.

Brian Betcham



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Allan Fotheringham

## On hanging with penguins

**Christmas is for kids.** As it should be. And always will be. So, a new grandfather is no longer the necessity of yesterday and it is disposable on Dec. 25, as it were. Last year, the resort was Cuba, a most interesting new place for coming down the chimney.

This year, what can best that? When, as we know because of the Y2K problem, there are three places one should not be at the end of the year. On a plane. In a hospital. On an elevator.

The solution was the safest place in the world to be on Christmas Day: holding hands with a penguin in Antarctica.

The seventh continent, the most mysterious one, the only one this ice-floated traveler had never touched. Brilliant sunshine. Warm boots. And the very last stop for Kris Kringle on his long journey from the North Pole.

We are at Poland's Henryk Arctowski Research Station in Admiralty Bay on King George Island. Arctowski's 1897 expedition, for scientific research, was the first to winter in the Antarctic. The Polish Academy of Sciences now maintains a shack town that can accommodate 14 people in the winter and 20 in the summer.

King George Island, of course, plays a vital part in the epic journey of St. Errol's Shackleton in these parts, a thriller more riveting than anything Agatha Christie could invent, as dramatic as Shakespeare, a story of survival and courage that is impossible to imagine in today's world.

Inhuman Shackleton, after being involved in Rosalind Wilson Scott's famous run-of-the-ice-cream race to the South Pole—beaten by Norway's Roald Amundsen by 33 days—decided in those rabid-driven expedition days to become the first team to walk across the entire Antarctic continent. Aided by 62 Canadian sled dogs.

It is tragic history by now how he fared, trapped by 1915 in ice for 20 months, his magnificent wooden *Endurance* melting, ship crushed by shifting ice, how he had taken his 27 men to makeshift tent camps on ice floes—while the sailors played soccer on the ice and the officers whined with each other—completely at the mercy of the tides and winds.

It's when those merciless elements denied him landing on King George, and he had to shoot all the dogs—men cried—and the puppets tumbled here. He and five of his best set out in a 22-foot longboat, roving for 17 days over 1,300 km with a makeshift sail—for eventual salvation at a whaling station.



He saved every one of his 27 men, his paradoxical achievement, only for the younger ones to arrive back in England before the war was over and go on to die in the trenches of France in the most insane war of all.

The penguins are most pleasant companions on a Christmas Day. With few natural enemies, they are like stray dogs—they waddle up to you in that Charlie Chaplin ridiculous waddle. They speckle the hillside above like a flock of closely related colored flowers, some 14,000 pairs says the guide, who warns that Antarctic environmental rules say you must never approach them, let them approach you. Like a stray dog. Or Charlie Chaplin.

No one—thank God—owns Antarctica, which is almost twice as large as the United States. There are no indigenous people, no one who has any claim to it. Except the penguins. And the albatross, who swoop about with a 12-foot wing span, the whales, the dolphins, the elephant seals who are as big as the rocks they hide behind (and the same colour).

It's a spooky place, of course. There's no stable land, no crops. You're warned if you step on a flower, the flower will not appear again for 100 years. No forests, no irrigated land. Nobody but maybe 12,000 scientists in the summer, who must get terribly bored playing bridge. It's the wildest place in the world, where temperatures can hit -90°C.

**The Chinese have two research stations here.** The South Koreans have one. There's something called the Antarctic Treaty, the organization that governs this vast palace of ice and now numbers 27 signatories—including New Zealand, Peru, Belgium and Bulgaria.

They are the ones who tell you that you can't step on the flowers and not to approach the penguins—unless they approach you. There is no McDonald's and only two postcards.

There is only the memory of the stupid Scott, who was so ill-prepared that—before he and four mates froze to death—they ended up pulling the dogs. And Shackleton's second-in-command, ordered to shoot the last 27 dogs, said: "It was the worst job I ever had in my life. I have known many men I would rather shoot than the worst of the dogs."

It's not as much fun as being with the kids, but there are worse things than being hand-in-hand with a penguin on Christmas Day.



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